

National Institute on Alcohol Abuse and Alcoholism

RESEARCH MONOGRAPH - 37



Alcohol Use Among  
American Indians  
and Alaska Natives

*Multiple Perspectives on  
a Complex Problem*



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NIAAA Research Monograph No. 37

# ALCOHOL USE AMONG AMERICAN INDIANS AND ALASKA NATIVES

*Multiple Perspectives on a Complex Problem*

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The opinions expressed herein are those of the authors and do not necessarily reflect the official position of NIAAA or any other part of the National Institutes of Health.

Key words are included in the beginning of each article. These descriptors are drawn from *The Alcohol and Other Drug Thesaurus: A Guide to Concepts and Terminology in Substance Abuse and Addiction, Third Edition, 2000* and may be used to retrieve this monograph in the Alcohol and Alcohol Problems Science Database (commonly referred to as ETOH).

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## FOREWORD

Many Indian communities experience significant social, economic, and health problems as a result of alcohol abuse and alcoholism. However, much of our information about the biological and behavioral antecedents of alcohol problems among Native populations has been anecdotal at best, and completely wrong at worst. With this perspective in mind, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the Indian Health Service (IHS) joined forces to convene a conference in 1996 aimed at identifying both research findings and research needs concerning alcohol problems among Native populations. This monograph, *Alcohol Use Among American Indians and Alaska Natives: Multiple Perspectives on a Complex Problem*, is a direct result of that conference. It is based on extensions of presentations made at the conference plus new solicited chapters, and it represents the findings and views of scientists and clinicians, both Indian and non-Indian, about the multiple dimensions of alcohol use problems among Native populations.

The presenters and the NIAAA and IHS organizers of the conference believe that making this information widely available will help advance the pace of research interest in Indian alcohol problems across the broad range of biological and behavioral disciplines. The authors of the individual chapters have worked hard to prepare their reviews and findings for publication, and they deserve our thanks for their efforts. We also are indebted to Dr. Patricia Mail for her efforts both in organizing the original conference and for her demonstrated knowledge, insights, and patience in editing this monograph. Without her involvement this publication might not have been possible.

As we gain more knowledge about the etiology and consequences of alcohol abuse and alcoholism among Indians, we will also gain greater ability to prevent these problems and to treat them when and where they occur. I believe that this monograph is a major step toward accomplishing these goals, and I commend it to your attention.

Enoch Gordis, M.D.  
Former Director  
National Institute on Alcohol Abuse and Alcoholism



## PREFACE

The subtitle of this monograph highlights the fact that its chapters voice multiple perspectives on the complex problem of alcohol use and abuse among American Indians and Alaska Natives. Several of the authors are themselves American Indians, and most of the contributors have experienced or witnessed firsthand the social and personal costs of alcohol misuse among Indian families and communities. In the aggregate, American Indians and Alaska Natives have a relatively high risk of dying from an alcohol-related illness or problem, since 4 of the 10 leading causes of their deaths substantially reflect the consequences of alcohol abuse and dependence. These include unintentional injuries (such as traffic crashes), chronic liver disease and cirrhosis, homicide, and suicide. Even though relevant mortality rates (e.g., unintentional injuries) have shown sharp decreases over time, they are still significantly higher than comparable rates for the general population.

Yet serious scholars who address the issue of Indians and alcohol are forced by reality to emphasize a major caveat: that there is so much diversity in drinking patterns and their consequences from tribe to tribe and within tribes that it is impossible to make generalizations that apply to American Indians as a whole (Moss 1981; Weisner et al. 1984; Heath 1989; National Institute on Alcohol Abuse and Alcoholism [NIAAA] 1990; Choney et al. 1996). From an etiological research perspective, this absence of universality offers opportunities for comparative studies of risk and protective factors that would not be possible if all Indians were equally vulnerable to alcohol abuse and related problems. With respect to prevention and treatment research, the diversity in drinking styles and consequences across and within tribes offers opportunities to develop and test interventions that are deliberately tailored for diverse target groups and varying levels of problematic behavior.

Current NIAAA-funded studies among American Indians and Alaska Natives illustrate the fundamental importance of so-called "participatory research," which in its more extreme form has been defined as "research in which members of the intervention population share equally with researchers in research planning, implementation, evaluation, and dissemination of results" (DeCambra et al. 1992; see also Langton and Taylor 1995). In the domain of public health, community-based participatory research involves a partnership among community members, their organizational representatives, and the researchers themselves, with the partners sharing expertise, responsibilities, and

ownership of the research enterprise (Israel 2000). The goal is to enhance understanding of the phenomenon being studied—but not simply for the sake of knowledge. The rationale for community “participation” in the research is that it will benefit the participants through direct intervention or “by using the results to inform action for change” (Israel 2000).

Therein lies the key to research among American Indians and Alaska Natives as well as research among the full range of racial and ethnic minority groups in the United States. The National Institutes of Health, particularly the Institutes that focus on segments of the population who see themselves as disenfranchised, are becoming increasingly aware of the importance of collaborating with their study populations in developing and implementing research. Such collaboration may necessitate compromise on the part of researchers whose standards of experimental design contradict or challenge traditional cultural beliefs and mores of the proposed study populations. But in exchange for compromise, the groups participating in research may themselves become the teachers, sharing with the investigators critical pieces of the puzzle and innovative maps for their integration. Moreover, Indian reservations, their adjacent urban communities, and Alaska Native villages are fertile ground for natural experiments focused on the prevention and treatment of alcohol problems. Researchers have taken advantage of these naturally occurring interventions (such as tribal constraints on the availability of alcohol or indigenous pathways to sobriety) to learn what does and does not work.

The National Institutes of Health have made a firm commitment to addressing disparities in health and illness across racial, ethnic, socioeconomic, and other subpopulations. This commitment is shared by NIAAA, and it clearly applies to studies of alcohol problems, their prevention, and their treatment among American Indians and Alaska Natives. The research described in the chapters to follow has helped build the foundation for emergent research and studies still to be conceived that have the ultimate objective of reducing morbidity and mortality from alcohol-related problems among Native people at risk.

Jan Howard, Ph.D.  
Chief, Prevention Research Branch  
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This monograph is the result of several years of work along with the dedication and commitment of many people who believed that compilation of this information was important. It is our hope that this overview of the complex issues surrounding American Indian and Alaska Native use of and relationships with alcohol will provide new directions in research and intervention.

No work of this magnitude is accomplished without the help of many people whose names do not appear as authors, and their work is no less appreciated. The following people provided early guidance, thoughtful analysis, contributions to the workshop, constructive comments, important insights, editorial input, and peer review:

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For the commitment of these individuals to increasing understanding of the issues and seeking to develop and implement appropriate interventions, we express our deepest admiration and appreciation.

The Indian Health Service was an active partner in the sponsorship of the original conference, supporting their employees' participation in the conference. NIAAA deeply appreciates their cooperation and support. The monograph has

been developed in a style that we hope will make it more accessible for tribal and urban program clinicians, health workers, and administrators.

A major portion of what makes this monograph readable was the expert and patient copyediting by Pat Freedman of CSR, Incorporated. All of the authors are indebted to her skills in clarifying our thinking, expression, and discourse.

And finally, our thanks to Dr. Jan Howard, who believed in and encouraged this volume. She and Diana O'Donovan helped shepherd it through the publication process so that it would see the light of the new millennium.

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# ABBREVIATIONS AND ACRONYMS

AA	Alcoholics Anonymous
ADH	alcohol dehydrogenase
ADHD	attention deficit hyperactivity disorder
ADM	alcohol, drug, and/or mental disorders
AIDS	acquired immune deficiency syndrome
AIVVP	American Indian Vietnam Veterans Project
ALDH	aldehyde dehydrogenase
AOD	alcohol and other drug
APA	American Psychiatric Association
ARBD	alcohol-related birth defects
ARND	alcohol-related neurological defects
ASP	antisocial personality disorder
ATGS	Alcohol Treatment Guidance System
BAC	blood alcohol concentration
BIA	Bureau of Indian Affairs
CDC	Centers for Disease Control and Prevention
CIDI	Composite International Diagnostic Interview
DHHS	[U.S.] Department of Health and Human Services
DIS	Diagnostic Interview Schedule
DISC	Diagnostic Interview Schedule for Children
DNA	deoxyribonucleic acid
DSM	<i>Diagnostic and Statistical Manual of Mental Disorders</i>
DUI	driving under the influence
ECA	Epidemiologic Catchment Area
FAE	fetal alcohol effects
FARS	Fatal Accident Reporting System
FAS	fetal alcohol syndrome

FY	fiscal year
g	gram(s)
GABA	gamma-aminobutyric acid
HIV	human immunodeficiency virus
ICD	International Classification of Diseases
ICT	Indian Culturalization Test
IHS	Indian Health Service
IOM	Institute of Medicine
IRA	Indian Reorganization Act
IRB	Institutional Review Board
IRT	item response theory
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
kg	kilogram(s)
K-SADS	Schedule for Affective Disorders and Schizophrenia for School-Aged Children
MADD	Mothers Against Drunk Driving
MDD	major depressive disorder
MMPI	Minnesota Multiphasic Personality Inventory
NAPIS	National Alcohol Program Information System
NAPPASA	Native American Prevention Project Against AIDS and Substance Abuse
NCAIANMHR	National Center for American Indian and Alaska Native Mental Health Research
NCHS	National Center for Health Statistics
NCS	National Comorbidity Survey
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NIMH	National Institute of Mental Health

NVVRs	National Vietnam Veterans Readjustment Study
OEO	Office of Economic Opportunity
OMI	Office of the Medical Investigator [of New Mexico]
OR	odds ratio
P.L.	Public Law
PRISM	Psychiatric Research Interview for Substance and Mental Disorders
PTA	parent-teacher association
PTSD	posttraumatic stress disorder
RTI	Research Triangle Institute
RTR	Reducing the Risk [curriculum]
SADS	Schedule for Affective Disorders and Schizophrenia
SCID	Structured Clinical Interview for DSM-III-R
SES	socioeconomic status
SIDS	sudden infant death syndrome
SODAS	Stop, Options, Decide, Act, Self-Praise [paradigm]
STD	sexually transmitted disease
SUPERPEP	Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project
VA	Veterans Administration
WHO	World Health Organization
WRIATC	Western Region Indian Alcoholism Training Center



# INTRODUCTION

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## Chapter 1

# Multiple Perspectives on Alcohol and the American Indian

Patricia D. Mail, Ph.D., M.P.H.

*KEY WORDS: Native American; Native Alaskan; AODR (AOD [alcohol or other drug] related) mortality; AOD use susceptibility; genetic linkage; ABC monopoly system; community-based prevention; community-based treatment; sexually transmitted disease; fetal alcohol syndrome; comorbidity; AODR accident mortality; AODR violence*

One of the most complex and historically difficult problems facing the Native peoples of North America is that of alcohol misuse. The complexity of the issues around alcohol use by the American Indian urban and tribal peoples and Alaska Native villagers is due to history, genetics, culture, economics, race, gender, and politics. To identify new perspectives and directions for research in this field, the National Institute on Alcohol Abuse and Alcoholism (NIAAA), in cooperation with the Indian Health Service (IHS), convened a conference in October 1996 to examine the multiple perspectives on Indians and alcohol

use. This conference brought together leading scholars (both Indian and non-Indian), young Indian researchers, and clinicians who had worked for years with Indian health programs to address the many medical and sociocultural problems raised by alcohol misuse.

The enthusiasm of the participants led NIAAA to ask the presenters if they would be willing to author chapters summarizing the history, current activities, and research needs relevant to alcohol use by American Indians. This monograph is the result of their work and commitment to addressing the challenges faced by Indian people. The chapters that follow identify key

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findings from the prevention, treatment research, and clinical practice literature, including consideration of special sub-populations (e.g., women, youth, and urban residents) and issues where additional research would increase our understanding and expand the application of research into practice.

### A NOTE ABOUT TERMINOLOGY

Various terms are used to identify the original native inhabitants of North America. The most common term is "American Indian," although "Native American" and "First American" are also used. Because Alaska Natives are included under the jurisdiction of the Federal Government, one often sees the term "American Indian and Alaska Native" as a catchall in referencing larger Indian issues. In this monograph, the term "American Indians" (or "Indians" for brevity) is used to encompass all continental tribal peoples, including Alaska Natives (Athabaskans, Inuits, and Aleuts), indigenous to North America prior to the arrival of the Europeans. When appropriate, reference is made to Alaska Natives separately and/or to specific tribes.

### SETTING THE STAGE

What makes the subject of Indians and alcohol so complicated? Some of the explanation may lie in the lack of research from an Indian perspective; a confusion over genetic susceptibility; and a complex history around the introduction, prohibition, and legal-

ization of alcohol use by Indians. In the lives of Indians, beverage alcohol was only one element in a larger, more complicated history involving land ownership, immigration, trade, conquest, and a clash of cultures taking place from the early 17th century to the present. Given its ability to disrupt and destroy lives, alcohol became for the European the symbol of everything that was harmful to and disgraceful about Indians (Anonymous 1913, 1916). For the Indian, alcohol came to represent both oppression and escape (MacAndrew and Edgerton 1969), and it came to be symbolic of Indian moral failings and an inability to successfully assimilate European values and behaviors (Price 1955; Clairmont 1962).

Before the arrival of the Europeans, very few Indian tribes had experience with fermented or distilled beverages (Abbott 1996; French 2000). Historians report that in initial encounters with European explorers and settlers, Indian people declined the use of ceremonial alcohol, finding its effects unpleasant. Gradually, given repeated exposure to alcohol and its euphoric effects, liquor became a valuable trade commodity. But the lack of Indian experience with this intoxicating and addictive beverage led to erratic and exuberant behaviors that alarmed the colonists, causing them to fear for their safety. Some of the early behaviors reported by Jesuit priests working among the Indians of the eastern woodlands included comments on the general disorder and physical violence that occurred among the Indians who had been drinking. The Jesuits cited "clamors, brawls, and fatal accidents,"



including murders and maiming (Dailey 1968, p. 47). The colonists responded by passing laws that restricted the Indians' access to alcohol (*Laws of the Colonial and State Governments Relating to Indians and Indian Affairs* 1832; Gonzalez 1977; Unrau 1996).

Some Indian drinking behavior was also attributed to the Indians' association with the hunters and trappers who penetrated Indian territory seeking their fortunes (Gonzalez 1977). The annual rendezvous during which furs were sold to European traders was a time for drunken celebration. Indians participating in this ritual had the opportunity to learn a distinctive style of drinking, which they may have believed was normal and appropriate (Winkler 1969). Trappers and traders may have perceived an advantage in bargaining with Indians who were intoxicated at the time of negotiation.

MacAndrew and Edgerton (1969) postulated that drunken comportment, which they believe to be a learned behavior, served important social functions in the Indians' closed social systems by providing an outlet, or "time out," from cultural expectations. This view has been reported by other authors as well (Hill 1978; Thomas 1981; Foulks 1987). More recently, the maintenance of destructive drinking behavior has been described by both Indian and non-Indian observers as a protest movement deliberately engaged in by Indian people because they know it will distress the Euro-Americans whose legislation now governs their lives (Lewis 1970; Lurie 1971). In addition, members of many tribal

groups see the use of alcohol as an important element in their daily social life and as making a contribution to group solidarity (Manzollillo 1955; Waddell 1973; Callahan 1981). However, Hollywood has played a major role in reinforcing the negative images and stereotypes of Indian peoples in Western films (Friar and Friar 1972), so the predominant image available to Indians and non-Indians alike is one of drunkenness and violence.

History also shows that although Congress passed laws prohibiting the sale of liquor to Indians, the Indian agents appointed to enforce the law often neglected this enforcement. Thus, Indians confined to "Indian Territory" in what is now Oklahoma represented a market for active bootlegging. The same was true for the reservation-confined Indian peoples in the Midwest, West, and Southwest. To this day, on those reservations maintaining prohibition in tribal codes and statutes (so-called dry reservations), bootleggers thrive. Few communities had the courage exhibited by the Alkali Lake Band in British Columbia. Here, elected leaders collaborated with local law enforcement to identify and help arrest the bootleggers (Lucas 1986).<sup>1</sup>

Thus, Indian alcohol history is a complex tapestry of alcohol introduction by several European cultures at several points and places in time: the European colonists along the Atlantic

<sup>1</sup> Reported by Alkali Lake Band Chairman Andy Chelsea in an address to Community Health Representatives from British Columbian bands in Vancouver, Canada, August 1982.

coast, the Russian fur traders and explorers in Alaska and the Northwest, the Spanish colonizers in the Southeast and Southwest, and the French and British traders in Canada and the colonial Northeast. Restrictive colonial, and later Federal, edicts prohibiting Indians from obtaining or using alcohol invariably followed beverage alcohol's initial introduction. Early colonial laws were designed to preserve European land acquisition (Prucha 1962) and to protect the European colonists from alcohol-induced Indian violence directed at the settlers (*Laws of the Colonial* 1832; Dailey 1968; Levine 1983). Later the American Federal Government imposed restrictive regulations and prohibition laws (Prucha 1962). As reservations were established, the War Department, and later the Bureau of Indian Affairs (BIA) within the Department of Interior, imposed tribal bylaws and policies that prohibited purchase, possession, and use of alcohol (Unrau 1996).

The confusion over alcohol and its proper place in society continues today. Some tribes have rescinded prohibition in order to gain income from the sale of liquor, while other tribes maintain reservation-wide prohibition, even though individual members of the communities have ready access to alcohol (May 1992). In cases where access is restricted (e.g., Alaska, Northwest Territories), there are many recipes for home brew (Honigmann and Honigmann 1945; Helm and Lune 1961; Balikci 1963), as well as use of commercial, nonbeverage intoxicants (Burd et al. 1987).

In addition to the history of settlement, trade, and legislation that complicates the understanding of Indians and alcohol, there are several other areas in which the literature shows evidence of confusion and lack of information. For example, more research is needed in the areas of biological susceptibility, genetic inheritance, and alcohol metabolism. The genetics of alcohol and Indians have only recently begun to be explored, so information in this realm is limited. However, what little is known is helpful in dispelling old myths and highlighting better ways to anticipate problems and plan more appropriate interventions. One of the great disservices done to Indian people was the imposition of the widely accepted stereotype of the "drunken Indian" that held that Indians, being biologically different, could not "hold their liquor" as the European was alleged to be able to do. What began as an observation of behavioral differences grew into a belief that Indians were genetically inferior when it came to using alcohol. This is often referred to as the "firewater myth." Misunderstood nature and nurture were interwoven into "fact" that, even today, is accepted by many people, including Indians.

The understanding of Indian response to alcohol was further confused by the belief, propagated by some Indian treatment programs, that Indians, being unaccustomed to drinking and lacking long-term exposure over many generations, exhibited an "allergy" to alcohol that made it impossible for them to drink safely

(Thompson 1942; E.R. McGunigle, "Problem drinking among American Indians and a new look at its cause," Southwest Summer Institute, Colorado College, 1973 [unpublished manuscript—one of the few papers to suggest that Indian alcoholism might be due to allergic responses]), and by the thesis that short-term exposure to alcohol led to increased genetic susceptibility because of lack of physiological experience in dealing with this drug (Milam 1974; Hussey 1976). Over time, there have been several studies of metabolic differences (Fenna et al. 1971; Lieber 1972; Ewing et al. 1974; Bennion and Li 1976; Reed et al. 1976; Farris and Jones 1978*a*, 1978*b*) that further confused the issue. Fortunately, more recent genetic research is yielding evidence that (1) some Indian individuals are more susceptible than others are, and (2) this susceptibility is not unique to Indians but rather is transmitted in families from generation to generation. More work needs to be conducted in this area.

The misunderstanding about alcohol physiology and genetics, when added to the historical confusion created by discriminatory laws and policies, was increased when set against the background of cultural naivete among many tribes. Inexperience due to lack of exposure and opportunities to learn various styles of drinking created inappropriate reactions to the presence of alcohol in Indian communities, serious consequences for the drinker, and opportunities for Indians and non-Indians to benefit from the illicit provision of alcohol. The eco-

nomics of alcohol in Indian communities has rarely been addressed. The cultural ability to accommodate alcohol varied enormously by tribe, and it continues to be a factor today in the development of prevention and intervention programs designed to reduce the harm of imprudent consumption. Even those tribes that prehistorically had access to mildly alcoholic beverages, whether secular (the Apaches) or sacred (the Tohono O'odham [formerly known as the Papago]), were unable to adequately address the consequences of European-introduced alcohol into their cultures.

The final factor that complicates the relationship between Indians and alcohol is that of politics. Law, regulation, and policy, as wielded by bureaucrats, have been subtle or not-so-subtle instruments of restriction, prohibition, confusion, and domination. Various researchers have commented on the powerlessness or dependency of Indian communities and the severe cultural and social disruption that this ever-changing and complex relationship creates for once autonomous and sovereign peoples (Funke 1976; Marenin 1992; Duran and Duran 1995).

## SUMMARY OF MONOGRAPH CHAPTERS

This monograph is divided into five sections. The introductory section contains two chapters, both of which provide background and an overview of the issues for the remainder of the volume. Section II, Epidemiology, Genetics, Policy, Prevention, and

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Treatment: Issues and Implications, contains chapters exploring the epidemiology of alcohol use, research in Indian genetics, alcohol control policies, and research in prevention and treatment. Section III, Subpopulations of Critical Concern: Youth, Women, and Urban Indians, has four chapters that address research in these subpopulations. Section IV, Special and Emerging Issues and Problems for Indian Communities, contains five chapters in which the authors examine HIV/AIDS and alcohol and other drug (AOD) abuse prevention, fetal alcohol syndrome, comorbidity between alcohol abuse/dependence and psychiatric disorders, alcohol-related motor vehicle fatalities, and violence in Indian families and communities. Section V closes the monograph with a discussion of research issues, highlighting those areas in which there is a marked absence of scholarly inquiry.

## INTRODUCTIONS

This chapter and the following chapter by Hawkins and Blume provide an introduction to the many and complex issues derived from and related to the use of alcohol by the aboriginal peoples of North America, beginning with a consideration of the broader context in which Indians and alcohol interact. The Hawkins and Blume chapter, "Loss of Sacredness: Historical Context of Health Policies for Indigenous People in the United States," provides a succinct overview of history and policy that shaped many of the issues addressed in this monograph. The authors discuss the

origins of New World peoples and the availability of alcohol before European contact, examining the variety of ways in which the European migrations profoundly and permanently changed the lives and cultures of the Indian people. Included in the assaults on Indian culture and communities were European-carried infectious diseases. Disease was a major contributor to the destruction of entire communities and the demoralization of Indian tribes. Following pathogenic assault, European liquor and laws continued the containment, confinement, and disruption of Indian peoples.

Hawkins and Blume discuss U.S. Federal Indian policy, from treaties and trade regulations to land disbursement and forced assimilation, until the passage of the Indian Reorganization Act in 1934. This act restored some measure of self-determination and local governance to Indian tribes. Along with some measure of autonomy, however, were the Federal policies that narrowly defined membership in tribes and eligibility for services. To be Indian, Federal policy maintained that an individual must have at least one-quarter Indian blood and be a member of a federally recognized tribe. The definition of who is an Indian and eligibility for Indian benefits continue to be issues for Indian people. The Hawkins and Blume chapter sets the stage on which the current provision of Indian health care and services, including AOD abuse treatment and prevention, are played out. The chapter closes with a discussion of current Indian demographics and health status.

## EPIDEMIOLOGY, GENETICS, POLICY, PREVENTION, AND TREATMENT: ISSUES AND IMPLICATIONS

### Indian Alcohol Epidemiology

Data collection always poses a challenge, because Federal law and economic circumstances, among other things, have dispersed Indian people from reservations into urban settings. Welty helps put Indian health data in perspective in his chapter, "The Epidemiology of Alcohol Use and Alcohol-Related Health Problems Among American Indians." For Indian vital data, the IHS has the most extensive and consistent data collection system in the country, drawing from IHS and tribally managed reservation-based clinics as well as urban health centers. Welty describes how this information is collected and analyzed. However, researchers wanting a more complete picture need to be aware that the BIA collects additional data that could also provide information on alcohol misuse. The BIA has jurisdiction for Indian education, law enforcement, and child welfare programs, among others, all of which may yield alcohol-related information.

To show the impact of alcohol on Indian people, Welty discusses the consequences of alcohol misuse through current alcohol-related mortality data. He also examines other potential dangers resulting from alcohol abuse, such as sudden infant death syndrome and cardiovascular disease. Welty then addresses special problem areas that are often the focus of

Indian alcohol research, including AOD use by youth, motor vehicle crash injuries, and alcohol use by the elderly. Finally, Welty discusses the implications of the data for clinical and prevention programs. The review of morbidity and mortality provides vital background data for the chapters that follow.

### Alcohol and Genetic Susceptibility

An ongoing concern among Indian people is the issue of genetic susceptibility. A frequently recurring myth about Indians and alcohol is that Indians are physiologically different from Europeans, and thus cannot tolerate alcohol to the same degree as other alcohol-using populations. Other theories put forward are that Indians metabolize alcohol more slowly than non-Indians, that they have an allergic response to alcohol due to lack of a long history of exposure, and that they are inexperienced with alcohol and its effects. The chapter by Long, Mail, and Thomasson, "Genetic Susceptibility and Alcoholism in American Indians," reviews the major lines of investigation in genetic susceptibility and describes current cooperative lines of research with Indian communities.

Current perspectives view alcoholism as a multifactorial disorder with a partially genetic predisposition, coupled with environmental circumstances that influence alcohol consumption. The protective Asian flushing response is explored in terms of how it is expressed in individuals presumably of Asian descent (i.e., assuming North American Indian

forebears came from Asia). The most promising new lines of inquiry are focusing on polymorphisms in candidate genes, genetic linkages, and the actions of neurobiological candidate genes. Reviewing past and present research, the most likely conclusion is that genetic susceptibility to alcohol addiction exists in some individuals and families, regardless of ethnicity. Indian people do not seem to have increased susceptibility when compared with other alcohol-using populations. Perhaps, in addition to expanding our knowledge of the genetics of alcohol dependency, we need to also be asking crucial questions about the implications of genetic research and what ethical guidelines should apply to future research in this very sensitive and little understood (by lay people) field of exploration.

### **Alcohol Control Policies**

In "Alcohol Control Policies and American Indian Communities," Berman develops a unique approach to Indians and alcohol use, viewing alcohol as a commodity and exploring the issues around alcohol use relating to supply and demand. Regulation of supply and demand through alcohol control policies could have the potential of reducing or preventing alcohol-related illness, injury, and death in Native communities. Berman's economic approach reviews the research on price and availability and considers the history of alcohol control policies among American Indian communities. He proposes a more complete model of drinking behavior that may reconcile conflicting findings and help to frame

questions of alcohol control policy. The model generates a number of testable hypotheses that have major implications for research on alcohol policy.

Berman's discussion touches on some issues that have rarely been raised in research into Indian alcohol use. For example, he raises the possibility that prohibition of alcohol possession is no more effective, and may be less effective, than an importation ban. He also suggests that tribally operated or licensed alcohol sales outlets may have the potential of promoting responsible drinking and reducing problem drinking. Several of his hypotheses also touch on harm reduction approaches rather than the usual abstinence policies. This is consistent with suggestions that have been raised by Canadian researchers (Landau 1996). Overall, Berman's comprehensive model proposes several new research directions in exploring hypotheses about time and money, availability, economic and social policy, social and cultural factors, and community cohesion and empowerment. His perspectives provide welcome new directions for research on Indians and alcohol use.

### **Prevention and Treatment**

Although prevention and treatment could be viewed as occurring along a continuum in the Indian community, these topics are often addressed separately. Treatment paraprofessionals have a great deal to say about prevention, but few in the prevention community suggest how treatment should be delivered. When prevention fails,

treatment may be required, but in the circular nature of events, maintenance of treatment often requires some forms of preventive intervention (e.g., relapse prevention, continued alcohol education). This subject is often discussed in the context of the public health model of primary, secondary, and tertiary interventions.

An alternative model, referred to as a "terminological map," has been proposed by the Institute of Medicine (IOM). The IOM Committee for the Study of Treatment and Rehabilitation Services for Alcoholism and Alcohol Abuse suggests that a triangular model better illustrates the continuum from no alcohol problem to severe alcohol problems and the relationship of problems to alcohol consumption (IOM 1990). Compare this to the older, often cited public health model, in which secondary prevention could be conceived as overlapping with primary treatment interventions, and tertiary prevention could be defined as aftercare or relapse prevention. The authors of the chapters in this section use the more familiar public health model in their discussions of community-based approaches.

As Indian communities began to establish intervention and treatment programs in the late 1960s, the priority for community leaders, social service workers, clinicians, educators, and religious and spiritual leaders was protection of children and prevention of AOD misuse. In her chapter, "Alcohol Prevention Programs Among American Indians: Research Findings and Issues," Parker-Langley reviews current prevention approaches.

Although there is frequent mention in the literature of the need to develop and deliver individual and community-based prevention programs in both urban and reservation settings, reports from actual planned and implemented interventions are scarce.

As a frame of reference for her review, Parker-Langley uses the classic public health model of primary, secondary, and tertiary interventions. Under each of these categories, she identifies the few extant studies available. Although one would expect a number of reports to come from school-based interventions, only six studies report the outcome of school-initiated programs. In all cases, the followup periods are so short (12 months is the longest reported followup) that no real conclusions can be reached about longer term effectiveness.

In discussions with community prevention specialists, Parker-Langley was able to identify current prevention activities, but few of these have a strong research or evaluative component, nor are they likely to be reported in the research literature. Indian communities are far more concerned with providing services than participating in research. In the interventions identified, the most common prevention themes are emphasis on reconnecting with or preserving cultural traditions, decision-making and coping skills, and bicultural competencies. Several programs incorporate survival or wilderness skills training and experience, which is also a common feature of some non-Indian drug intervention programs. In closing, Parker-Langley provides several rec-

ommendations for initiating prevention research protocols in Indian communities, as well as suggestions for program implementation. Her recommendations should serve as a guide for future work in this area.

Most Indian communities are vocal about the need for more and expanded prevention services, but the greatest unmet need in Indian communities is for treatment of those already involved with alcohol. In "Treating Indian Alcoholics," Mail and Shelton provide an overview of early treatment activities, federally supported approaches to assist paraprofessionals in providing comprehensive and coherent services, and a description of the emerging, alternative, more culturally focused modalities being used adjunctively in contemporary treatment.

The chapter reviews early attempts at intervening with problem drinkers, both through traditional or spiritual means and through more conventional Western approaches. The introduction of cultural elements (e.g., sweat lodges) into non-Indian treatment programs helped to make these programs more acceptable to and comfortable for the Indian alcoholic. Training of Indian paraprofessionals expanded the pool of individuals who could work at the community level, and some of these training activities are reviewed. However, the incorporation of cultural approaches in traditional treatment required approval by Federal administrators in order for Federal funds to be committed for program support. To accomplish this, the IHS worked closely with Indian

program directors to develop a treatment guidance tool that endeavored to ensure comprehensive and uniform treatment approaches, allow the use of cultural therapeutic components, and assure consistency in service delivery. Because this unique approach is not often mentioned in the Indian alcohol literature, it is discussed in the chapter by Mail and Shelton.

The authors also examine traditional healing ceremonies that are currently used by many AOD abuse programs, emphasizing those traditional and spiritual approaches that appear to demonstrate empirical success. Evaluation of community-based programs is also addressed to illustrate problems found in existing programs, as well as to identify strengths and weaknesses in the extant system of Federal and tribal treatment activities. The authors also address the need for broader interventions that include assessment of other psychosocial and behavioral problems, and they suggest new research directions in the treatment arena.

#### **SUBPOPULATIONS OF CRITICAL CONCERN: YOUTH, WOMEN, AND URBAN INDIANS**

Several authors examine selected subpopulations of Indian people that have been the subject of special focus in research and program development. Because Indians value children as the future of their tribes, there is a plethora of research on AOD use among Indian youth. The volume of research and reporting on Indian children can be contrasted to the paucity of research on Indian women.



Although women are regarded as the major strength of Indian communities, there has not been much systematic study of women's alcohol use behavior. The exception is the growing literature related to pregnant women's alcohol use. The stresses of migration and acculturation have been explored by anthropologists for half a century, but the research on urban Indians often seems unrelated to the work being done on reservations. The chapters in this section explore various aspects of these special areas of interest.

### Indian Youth and AOD Use

Epidemiologic surveys and school- and community-based research show that drinking begins at an early age for most Indians. Yet responses to youth alcohol-related behavior have been uneven, and long-term preventive interventions are scarce. In their chapter, "Prevention of Alcohol and Other Drug Abuse Among Indian Adolescents: An Examination of Current Assumptions," Beauvais, Jumper-Thurman, and Plested observe that trends in drug abuse appear to be operating independently of research contributions and preventive practices. These authors explore the underlying assumptions about youth alcohol use and propose new directions that Indian youth AOD use research might take.

In identifying the prevailing assumptions that guide current research, Beauvais and colleagues raise important questions about research directions that appear to be inconsistent with current findings, such as the complex issues around using measures

of self-esteem associated with AOD use. ("Low self-esteem" is one of the most common causes given in the research literature for youth AOD misuse. This is explored in more depth in the chapter by Trimble and Mahoney, described in the next section.) The authors suggest that youth research would benefit from a shift away from individual causal and psychological models to models that better delineate the social and environmental factors that support or deter AOD use in Indian communities.

To support their thesis for changing paradigms in adolescent research, they examine the different types of adolescent AOD users. They then discuss why an emphasis on preventive approaches based on a socioenvironmental model might be more culturally congenial and effective. These approaches may include such factors as peer interventions, school-based programs, and family and community interventions.

The authors close with a discussion of the effect of failed programs and the consequences of this failure for Indian communities. They suggest factors that might strengthen community approaches and discuss the need to reassess the role of culture in prevention. The issues and observations in this chapter provide important suggestions for new research directions, with special attention to prevention research.

### Issues in Measurement: Youth and Self-Esteem

Self-esteem is a self-report measure that is frequently used to explore

behaviors that lead to AOD abuse. Trimble and Mahoney, in "Gender and Ethnic Differences in Adolescent Self-Esteem in Alcohol and Other Drug Use Research: A Rasch Measurement Model Analysis," explore the importance of the self-construct among adolescents, especially as it pertains to the measurement scales used with ethnic populations. The concept of "ethgender" is introduced to describe self-esteem as a function of both gender and ethnicity. It is important to note, however, that the various instruments used to measure self-esteem have not been adequately evaluated.

The use of measures of self-esteem in AOD use research is generally based on some derivation of Jessor and Jessor's (1977) problem-behavior theory. In this model, high self-esteem is held to be an important protective factor against engaging in deviant behaviors. Yet in several cross-cultural studies, measures of self-esteem have failed as significant predictors of substance use. Trimble and Mahoney propose that one explanation lies in the way in which self-esteem scales are analyzed when used with different cultural populations.

As an example of the importance of measurement constructs, the authors apply a particular statistical method, the Rasch measurement model, in the analysis of data collected from a sample of Euro-American, Hispanic, and American Indian adolescents. The results show self-esteem items to be largely redundant and not unique contributors to determining the level of self-esteem. However, the results

highlight important group and gender differences. Many studies of Indian youth use measures of self-esteem (Lefley 1982; Olsen and Baffi 1982; Dorpat 1994; Navarro et al. 1997), but the results of Trimble and Mahoney's analyses demonstrate that caution should be applied in interpreting results of such studies because there is great variation in these measures.

### **Indian Women and Alcohol Use**

The literature specifically addressing alcohol use by Indian women, other than the research into fetal alcohol syndrome (FAS), is sparse. Mail and Silk Walker review available epidemiology and explore alcohol use by Indian women in their chapter, "Alcohol in the Lives of Indian Women." Revisiting early epidemiologic and community-based studies, they explore the variety of women's drinking behaviors reported but not highlighted in these studies. The first studies were reservation based, but later studies investigate urban women's alcohol use.

The paucity of research on treatment for alcoholic women is discussed in the Mail and Silk Walker chapter, and new models for recovery are described. Adaptations of traditional 12-step treatment approaches are also discussed, as Indian communities seek to make existing therapies more culturally congenial. The importance of family and community in prevention and treatment is reviewed. The chapter closes with eight broad recommendations for future investigation, including research into the causes and

prevention of abuse and victimization, investigation of alcohol's effects on family and child-rearing, and expanded research into issues of gender and comorbidity. Research is also needed to address the differences in treating men versus women and the role of the community in prevention and support for sobriety maintenance.

### Urban Indians and Alcohol

By the end of the 20th century, Indians residing in urban areas outnumbered those residing on reservations. In his chapter, "Urban Indians and Alcohol Problems: Research Findings on Alcohol Use, Treatment, Prevention, and Related Issues," Moran succinctly summarizes the three major forces that contributed the most to the urban migration and the role of alcohol in urban Indian society. He then turns to an examination of research findings drawn from contemporary urban Indian populations, noting that most of this research has taken place in only a few major urban centers. Although the studies reported by Moran provide useful information about who drinks, researchers are now focusing on the meaning of drinking for drinkers. Moran addresses the importance of community involvement in developing both treatment and prevention programs, and the unique challenges of delivering such services in an urban setting where the "community" is much more difficult to identify. And if cultural components are essential for success, whose culture and what components should be included for a multiracial aggregate of individuals?

Moran notes the lack of a comprehensive epidemiologic study of Indian drinking in the United States. There is virtually no information about the vast majority of urban Indians who are not chronic alcohol users. In examining prevention and treatment programs for urban Indians, Moran finds that the literature on such programs is limited. The results of the reported preventive interventions are promising, but they are difficult to assess or compare because they used different approaches and small samples. Moran poses several important questions to guide future research, along with the caveat that researchers need to be sensitive to cultural differences and to become culturally competent. He discusses the barriers faced by researchers who want to study urban Indian populations, including the need to overcome the perception among Indians that they have too often been the subjects of research without obvious benefits to the community.

### SPECIAL AND EMERGING ISSUES AND PROBLEMS FOR INDIAN COMMUNITIES

This section of the monograph considers research in several areas of special interest to Indians and non-Indians alike. First, the rise of the human immunodeficiency virus (HIV) epidemic and its connection with AODs prompted a large southwestern tribe to enter into a collaborative prevention and research project with the Johns Hopkins University (JHU). This joint effort to address and prevent this epidemic from spreading among Indian youth is described in

this section. The approach constitutes a potential model for other communities.

A more long-standing problem, but one that has only fairly recently been identified, is that of alcohol-related birth defects (ARBD). Some of the earliest epidemiology on FAS was conducted with Southwest Indian tribes, and this information led to the creation of a national program that heightened awareness in Indian communities about the importance of prevention (May and Hymbaugh 1989).

Another research area gaining attention is in mental health; specifically, the issue of psychiatric comorbidity and alcohol dependency/addiction. Although Indian mental health studies date back to the early part of the 20th century (Hummer 1913; Bailey 1922; Devereaux 1948), and extensive community studies began in midcentury (Devereaux 1961), well-designed psychiatric investigations have only recently been initiated in Indian communities.

Alcohol involvement in motor vehicle crashes among American Indians is another rarely studied and reported issue. Although this problem has existed for a long time in Indian communities, the effect of such behavior is one of the most understudied areas in Indian alcohol research.

Finally, the issue of alcohol-related violence is also understudied, and it is just beginning to be discussed in Indian communities. All types of violence concern researchers, but the problem of violence against American Indian women needs special attention.

The authors of the chapters in this section are known for their expertise

in these areas. They review current research and help illustrate other potential avenues for fruitful exploration, as well as discussing what work needs to be done in promoting health, preventing disease, and expanding the quality of Indian life.

### HIV/AIDS and AOD Use

Introducing preventive concepts across cultures sometimes requires unique approaches. Rolf, Nansel, Baldwin, Johnson, and Benally, in "HIV/AIDS and Alcohol and Other Drug Abuse Prevention in American Indian Communities: Behavioral and Community Effects," report on an innovative approach to develop a shared HIV and AOD use prevention vision for American Indian adolescents. This program was mounted in a culture where open discussions of sex and death are avoided and alcohol misuse is prevalent. The introduction of an HIV prevention curriculum into reservation and adjacent community schools presented major challenges. This chapter describes the Native American Prevention Project against AIDS and Substance Abuse (NAPPASA), the first theory-based AIDS and AOD abuse Indian-focused prevention program with substantial community and school components.

To develop, implement, and evaluate this program, Rolf and colleagues drew together a diverse, multidisciplinary team of local educators, health providers, community leaders, and youth from more than a dozen communities on or near the reservation. The research design and intervention

components were based on the knowledge that risky behaviors tend to occur in conjunction with one another. The process by which the program was initiated and sustained is described in the chapter.

In detailing this process, the authors also highlight important concepts for working with American Indian communities. The chapter summarizes the various key activities of the NAPPASA project. Results on risk behaviors, AOD use, and sexual behavior were obtained from a large sample of Indian and non-Indian students in grades 8 through 10, along with information about sexual behavior in conjunction with AOD use. The curriculum encouraged students to use appropriate social and cultural influences to assist them in making health-promoting and -protecting decisions.

The preliminary analyses of NAPPASA data yield evidence of wide-ranging changes in both Indian adolescent behavior and community support. The intervention also directly or indirectly influenced acceptance of the curriculum by local schools, increased support for HIV-infected people living in the communities, and brought about changes in the local medical care system in dealing with HIV-positive patients. The NAPPASA project provides an excellent example of collaborative success when researchers become partners with the communities in which they are working.

### Fetal Alcohol Syndrome

One problem facing Indian communities is totally preventable: fetal alcohol syndrome. May, McCloskey, and Gos-

sage, in "Fetal Alcohol Syndrome Among American Indians: Epidemiology, Issues, and Research Review," provide a comprehensive review of FAS in Indian communities, including the history of FAS and criteria for diagnosis. They review the history of Indian FAS research and prevention programs, and they describe some of the methods used to educate communities and individual women about FAS.

The epidemiology of drinking among Indian women is presented to provide a background against which preventive and therapeutic interventions are discussed. May and colleagues note that it is important to acknowledge the high rates of abstention among women on many reservations. However, among women who do drink, drinking is heavier and often concentrated (i.e., binge drinking, defined as consumption of five or more drinks in a row at least once in the past 2 weeks [Larimer et al. 1998]). This pattern of drinking contributes to high rates of female alcohol-involved mortality. Yet despite the ethnographic and medical evidence suggesting that some Indian women have major problems with alcohol, there is a paucity of literature on drinking and drinking problems among Indian women, and even less information about spousal drinking patterns.

May and colleagues also discuss maternal risk factors for FAS and associated conditions (alcohol-related birth defects [ARBD] and alcohol-related neurological defects [ARND]), noting that both maternal age and high parity increase the risk of giving birth to children affected by FAS and ARBD/ARND. FAS children's health

is at risk because they are less apt to be nurtured and cared for by their alcoholic mothers. This leads to a high rate of child placement out of the maternal home. Two case histories of Indian women are presented to illustrate the complex problem of FAS. The authors close by noting that Indian people do know a great deal about FAS, perhaps more than other U.S. populations. This knowledge, however, remains to be applied, and intervention and treatment outcome studies are just being initiated.

#### **Comorbidity: Alcohol and the Psyche**

Increasingly, researchers are turning to the exploration of alcohol misuse as it co-occurs with other psychological and psychiatric conditions. Beals, Novins, Mitchell, Shore, and Manson discuss these complex interrelationships in their chapter, "Comorbidity Between Alcohol Abuse/Dependence and Psychiatric Disorders: Prevalence, Treatment Implications, and New Directions for Research Among American Indian Populations." To set the stage for this discussion, the concept of *comorbidity* is defined, and relevant research literature is reviewed. It can be difficult to make psychiatric diagnoses, yet an accurate diagnosis is critical to determining appropriate therapeutic interventions. The most common diagnostic determinations are based on the criteria set forth in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM). The most recent edition, DSM-IV (American Psychiatric Association 1994), acknowledges the role that culture may play in influencing diagnoses.

Beals and colleagues highlight major studies of comorbidity in the general population and examine the treatment implications for addressing comorbid conditions. Investigation into comorbid disorders also yields important clues to the etiology of the condition(s). The authors note that the extent and implications of comorbidity between alcohol and other alcohol, drug, and mental health (ADM) disorders have received little attention in Indian populations.

The authors present findings from three studies conducted by researchers at the National Center for American Indian and Alaska Native Mental Health Research, a center unique for its scope and focus. These studies present data from a community- and school-based adolescent sample, an adolescent clinical sample, and a sample of adult male Indian veterans. Although alcohol abuse/dependence is common to all three samples, it becomes clear that alcohol abuse/dependence often co-occurs with other psychiatric symptomatology. Alcohol-abusing youth are at much greater risk for disruptive behavior and increased vulnerability to mood disorders. Among the veterans, alcohol abuse/dependence increases the risk for posttraumatic stress disorder, antisocial personality disorder, and major depression.

Beals and colleagues suggest future directions for research in three areas: the prevalence of comorbidity among American Indians and Alaska Natives, the primary versus secondary nature of comorbid ADM disorders, and the implications of comorbidity for service

utilization and treatment outcomes. The importance of interdisciplinary, culturally sensitive approaches to the understanding of comorbidity is stressed. A better understanding of the etiology, detection, environmental contributions, and treatments for these complex conditions is critical as Indian communities move toward assuming the responsibility for managing their own health care.

### Alcohol-Related Motor Vehicle Crashes

Motor vehicle fatalities have been a leading cause of death among youth and young adult Indians for more than 40 years. Despite the high mortality rates, there is a paucity of research data on the contribution of alcohol to Indian motor vehicle morbidity and mortality. In "Alcohol-Related Motor Vehicle Fatalities on and Around the New Mexico Portion of the Navajo Indian Reservation: A Baseline Study of the Pattern 1982-86," Bergdahl and May report on 470 motor vehicle fatalities that occurred in New Mexico and demonstrate a methodology for data collection that can be replicated to monitor change and the effectiveness of preventive measures.

Most of the data reported for this study came from the Fatal Accident Reporting System (FARS) and the Office of the Medical Investigator of New Mexico. It may be the only Indian "driving under the influence" study to report blood alcohol concentration (BAC) in vehicle drivers, passengers, and pedestrians. Bergdahl and May report significant gender and

age differences among the vehicular fatalities. They also compare BAC levels, crash type, and crash role (driver, passenger, or pedestrian) for Indian and non-Indian fatalities. For example, pedestrian incidents caused 39 percent of Indian deaths, while multiple-vehicle crashes caused 51 percent of non-Indian deaths. There are major differences in the BAC levels of the fatalities. Nearly 53 percent of Indians had BAC levels greater than 0.20, while almost 66 percent of non-Indian fatalities fell into the "no alcohol detected" category. Overall, nearly 75 percent of Indians were legally intoxicated at the time of death, compared with 22 percent of non-Indians.

Bergdahl and May discuss prevalence and style of alcohol use as possible contributing factors to these fatalities. Other factors may include road conditions, the rural geography, and tribal alcohol policies.

### Violence

The last area of special interest addressed in this monograph is one of the least examined, yet increasingly prevalent issues for Indian communities: domestic and community violence. In "Alcohol-Related Violence Among American Indians," Zahnd, Klein, Holtby, and Bachman bring together current research on the relationship between alcohol consumption and violence in the general population with what is known about alcohol and violence in Indian communities.

Despite evidence of high rates of violence, especially on reservations, there is little epidemiologic or inter-

vention research to help tribes draft approaches for amelioration and prevention of interpersonal violence. Indian judicial systems struggle with issues of family violence, child abuse and neglect, and alcohol-related assaults, while social and medical services attempt to address the results of child sexual assault, rape, homicide and suicide attempts, and injuries resulting from motor vehicle crashes, among other consequences of alcohol misuse. Despite the culturally espoused value placed on the family, it is evident there are families in great distress and some that are wholly dysfunctional. Yet research into the causes of violence and family stress remains mostly in the realm of hypothesis. It is important to note that, in reviewing current research and hypotheses regarding precursors to violence within Indian communities, Zahnd and colleagues found that binge drinking and high rates of violence are not universally observed across Indian communities.

Just as men's and women's experience with domestic and sexual violence differs, policies, interventions, and availability of services also differ by gender. Zahnd and colleagues pay special attention to the research on violence toward Indian women because there is so little information on this subject. Intervention on behalf of and protection for Indian women is especially important because Indian women are often the real strength and continuity within Indian communities.

The authors strongly recommend more hypothesis-driven research to explain how rates or patterns of prob-

lem drinking may be linked to rates or patterns of violence. They also recommend more research into those culturally derived interventions that are available to treat and support those individuals and communities seeking to recover from violence. The key to ending the negative consequences of alcohol misuse and alcohol-related violence may lie in the as-yet-unexplored and enduring strengths, such as sobriety, spirituality, and positive identity, increasingly found within contemporary Indian communities.

#### NEW DIRECTIONS FOR RESEARCH

The last chapter of this monograph contains a review of proposed research directions. All of the contributors to the monograph have many years of experience working in Indian communities, and their insights and recommendations for the various developing lines of inquiry help to expand our understanding of AOD use issues in the various Indian populations. Yet despite years of research, alcohol continues to be a significant and pervasive problem for Indian peoples without evidence of clear solutions. We hope that the discussions and recommendations of the contributors will encourage researchers to try new directions, to adopt new perspectives, and to question existing assumptions. We also strongly believe that the field would be greatly enriched by the presence of more Native scholars, as well as the perspectives of the alcohol users themselves.

The intention of this monograph is to provoke thought, questions, and additional exploration into those areas that have been understudied in the



past. It is only through the collective accumulation of information, coupled with replication and extension of promising interventions that are coordinated within communities by community members, that the seemingly intractable problem of AOD misuse can be changed.

## ACKNOWLEDGMENTS

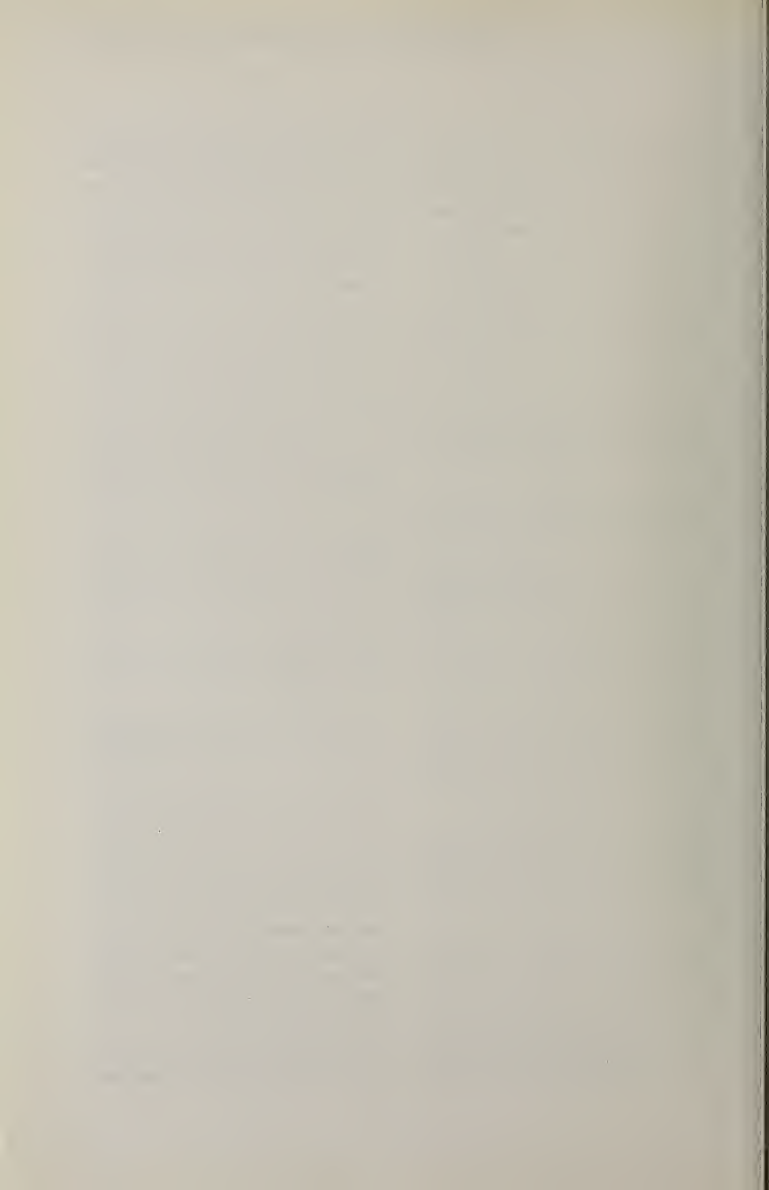
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## Chapter 2

# Loss of Sacredness: Historical Context of Health Policies for Indigenous People in the United States

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*KEY WORDS: Native American; history of AOD (alcohol or other drug) use; historical overview; cultural conflict; acculturation; health care administration; cultural identity; demographic characteristics*

To fully understand the current health care status and needs of American Indians, it is essential to look to the past. One must critically examine the historical and political relationships between the indigenous population of the United States and the Federal Government. This chapter lays the foundation for this examination by providing a broad overview of Native North America, from the origins of indigenous peoples to contemporary issues facing today's Indian tribes. Although our

discussion touches on early use of alcohol by Indians and Euro-American responses to it, the discussion does not emphasize alcohol use, which is addressed by the other authors in this monograph. Rather, we examine historic events and important legislation that have shaped the sociocultural environment in which Indians co-exist with non-Indians. The "loss of sacredness" refers to both the loss of culture and loss of land, each of which has sacred meaning to Indian people.

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## ORIGINS

We are at the end of a beginning and at a beginning again; it is a matter of what we want to do with our choices. (Anonymous Cherokee Elder, quoted in Garrett and Garrett 1996)

Anthropological evidence suggests that indigenous people entered the North American continent approximately 10,000–40,000 years ago (Sievers and Fisher 1981), but many facts remain unclear. For instance, the prevailing theory is that waves of people from northern Asia migrated via a land bridge called Beringia that was created when successive ice ages lowered sea levels (Williams et al. 1985; Nies 1996). Indeed, genetic, linguistic, skeletal, and dental evidence seems to support this theory (Turner 1978; Szathmary 1984; Brace and Nelson 1999; Young 1999). This theory is not without controversy, however, and competing explanations exist (Oswalt 1973).

American Indians have traditionally believed that they have resided in North America since the beginning of time. Creation stories by tribal groups and indigenous communities often revolve around a theme of the sacredness of all things and the inherent harmony of human beings with all things in their environment. Regardless of whether one believes in a traditional or scientific story of the origin of people in the Americas, the indigenous population was in harmony with their surroundings for generations before the Europeans arrived. The land

defined their identity as people, and they believed in the sacredness of all things, natural and unnatural (Davis 1999).

It is often assumed that indigenous people were not exposed to alcohol use before the arrival of Europeans. This is only partially true. Although distilled spirits were not known in North America before the first European contact, Bourke (1894) and LaBarre (1938) reported that the Aztecs in what is now central Mexico had mastered rudimentary distillation. And in many North American Indian communities, fermented berries and grains were used to create wines and beers. Alcohol made and used in this fashion was generally considered sacred and was used mostly in the context of religious or ceremonial activities (Abbott 1996). Because drinking was related to ceremonial purposes, and secular alcohol use was rare, no accounts of social problems resulting from alcohol use by indigenous communities were reported before the advent of Europeans (Abbott 1996).

## PRE-COLUMBIAN HEALTH AND THE COLUMBIAN EXCHANGE

Pathologists have looked at the bones of pre-Columbian American Indians in an effort to understand the general health of the indigenous people before they were exposed to European diseases. Although diseases existed and indigenous peoples had various health concerns, the consensus is that most Indians experienced a relatively high level of health in compari-

son with other groups around the globe. Traditional medical practices may have been quite advanced in many cases (Hollow 1999). The earliest written accounts and artistic renditions of Europeans encountering American Indians support these assertions. Indians were often portrayed as taller than Europeans, very muscular, in good health, and engaging in healthy lifestyle practices (Hollow 1999). Indeed, some indigenous people practiced advanced forms of medical practices, such as neurosurgery (i.e., trephination [Williams 1989; Mann 1991]), even when measured by today's standards (Hollow 1999).

However, these remarkable medical advances and health practices would not be enough to protect the vulnerable indigenous population. In 1492, as many as 8 million people may have lived in what is now the United States; by the time of the General Allotment Act of 1887 (discussed later in this chapter), the population had decreased to about 250,000 (Thornton 1987). Even before the armed conquest of indigenous people, American Indians experienced death and destruction of their societies from diseases for which there was no population immunity. Particularly devastating were such infectious diseases as tuberculosis, rubella, and influenza (Sievers and Fisher 1981).

When the Europeans arrived in North America, some were carriers of diseases, such as smallpox and typhus. Since these diseases were foreign to the Western Hemisphere, American Indians had no immunity to protect against their spread. Following trade

routes, these diseases preceded the soldiers, causing major epidemics in Indian communities. A 90 percent mortality rate was not uncommon in many Indian villages (Thornton 1987; Nies 1996). Indeed, by the time the Spanish soldiers moved inland to challenge the Aztecs, their society had already been decimated, with the Aztec army nearly destroyed by smallpox and most of the tribal leadership dead. As a result, resistance to the Spaniards was minimal (Nies 1996).

The pathological devastation was so complete in some areas that Europeans found abandoned villages and lands void of human beings. In Hispaniola, the Indian population, which may have numbered in the hundreds of thousands before the Spaniards, had shrunk to approximately 150 by 1540 (Dobyns 1983). In Florida, the extinction of Indians in the St. Augustine area left the Spaniards without any human labor to build the village. Slave trading from Africa began in part because there were not enough Indian slaves left after the plagues (Dobyns 1983; Nies 1996).

Because of the introduction and transmission of Old World pathogens to New World peoples, often called the Columbian Exchange<sup>1</sup> (Crosby 1972), many Indian societies were crippled or destroyed, either by accidental transmission of diseases to

<sup>1</sup> The concept of "exchange" comes from the theory that syphilis was endemic in the New World and was taken back to Europe by sailors. However, this theory has been disproved by findings of evidence of syphilis in the Old World predating the Columbian explorations (Moodie 1923; Brothwell and Sandison 1967; Goldsmith 1999).

which Indians had no resistance (Thornton 1987) or possibly through instances of deliberate transmission (see Stearn and Stearn 1945; Nies 1996 regarding the intentional introduction of smallpox-infected blankets). The latter tactic was not widely practiced. Warriors, healers, and political leaders were killed, leaving many tribes and communities with few resources to resist European armies; those who survived were no doubt demoralized.

This is the context within which Europeans introduced distilled beverages to the New World indigenous peoples. From the beginning of contact, and throughout settlement, westward expansion, the fur trade, military containment, and unfamiliar illness, beverage alcohol was increasingly available. Even tribes not decimated by disease were offered opportunities to share in drinking with trappers, traders, miners, soldiers, and cowboys. Several observers have proposed that American Indians learned to drink from those members of society who themselves had not been socialized into moderate drinking and therefore were not models of decorum (MacAndrew and Edgerton 1969; Winkler 1969; Jacobs 1972).

## COLONIAL CONQUEST AND ITS LEGACY

Before the English, the Spanish and French had contact with North American indigenous people. The French were interested in fur trading and established trading posts in Indian country, taking alcohol with them for

personal use and to trade for furs. The Spanish were more interested in appropriating precious metals, and they conquered Indian communities during this search, often brutally enslaving Indians to mine ore. However, Spanish conquest was reversed on at least one occasion when the Pueblo Indians revolted successfully in the late 17th century (Nies 1996). Later, Russians colonized the areas around the Bering Sea and, like the French, seemed interested in the fur trade. The English settlers who arrived in the east differed in that they were interested in farming, which meant a demand for cleared forests that were occupied and hunted by Indian peoples.

Whether because of easier access to alcohol, disruption of cultural norms and practices, discouragement and stress, defiance toward whites, or other factors, American Indians experienced problems related to drinking for the first time during the 18th and 19th centuries (MacAndrew and Edgerton 1969; Thornton 1987). McNickle (1957), an Indian historian, observed that wherever Europeans settled, major changes occurred for the Indians in the use of weapons and tools and in nonmaterial practices. It is unclear, however, if the years of epidemics that weakened indigenous populations may also have played a role in exacerbating the problems increasingly being reported relating to misuse of alcohol.

Regardless of reason, alcohol problems existed in sufficient strength to cause the English colonies to legislate Indian temperance (Gonzales 1977), with Connecticut being the first colony to do so in 1645 (*Laws of the*



*Colonial and State Governments Relating to Indians and Indian Affairs* 1832). Native people also expressed alarm concerning the excessive use of alcohol. For instance, in 1715, a tribal leader of the Pamunkey Powhatan tribe, named "Anne" by the English colonists, addressed the Virginia colonial legislature complaining of the sale of distilled spirits to her people. She asked for the colonists' help in controlling liquor sales, but the colony did not respond to her pleas with any beverage policy (Nies 1996).

## U.S. FEDERAL INDIAN POLICY

From its inception, the United States was interested in expanding its territorial claims beyond the eastern seaboard. In the 1840s, this idea of expansion came to be known as Manifest Destiny, which held that it was the divine right of the United States to possess all the land stretching from the Atlantic to the Pacific Ocean. Since indigenous peoples inhabited this land, they were viewed first as an annoyance to the goals of land acquisition and later as adversarial to the mission of the Nation. When pressed by the Government for land concessions, Indian communities responded in a variety of ways, from compliance and adaptation to western flight or open resistance.

### A TIME FOR TREATIES

In the quest for land acquisition, the army conducted treaty "negotiations" with different communities and tribes. Tools used by the Government to

negotiate these treaties included the use of alcohol as a bargaining chip and the introduction of drinking into the actual negotiation process (Mail and Johnson 1993; Daisy et al. 1998). White settlers also took alcohol into the frontier, trading it to indigenous peoples. Alcohol became a tool used to obtain traditional lands and other goods and resources.

The first of many treaties between Native Americans and the U.S. Government was signed in 1778 with the Delaware Nation (*U.S. Statutes at Large: Volume 7, Indian Treaties* 1846). Interestingly, this treaty promised congressional representation to the Delaware people, which never materialized. In 1785, the Fort McIntosh Treaty was signed under duress by several tribes. The role of alcohol in obtaining the lands from the Indians in this agreement was so great that it was referred to as the "whiskey treaty" (Nies 1996). By 1789, all Indian affairs were delegated to the U.S. War Department (Nies 1996), suggesting that relationships between Indians and the Government were considered hostile (Prucha 1962).

The U.S. Government signed many treaties with Indian peoples that traded promises of health care and protection services, "for as long as the grass shall grow," in exchange for land. Yet governmental policy during this period was often intrusive and at times neglectful, and most of these agreements were eventually disregarded and broken (Kickingbird and Ducheneaux 1973; Nies 1996). Providing health care for American Indians was not a high priority of the U.S.

Army during this time (Davis 1999). However, the terms of these earlier negotiations remain in effect and continue to define the relationship of the U.S. Government to American Indians to this day. The Federal Government is bound in perpetuity to uphold the promises made by earlier administrations. This trust relationship includes provisions made for the care and well-being of eligible American Indians and Alaska Natives. An important component of this is policy formulation and delivery of alcohol treatment services.

Paradoxically, the same Government that negotiated treaties with alcohol also responded with a number of legislative initiatives aimed at curtailing alcohol use among Indians. The Trade and Intercourse Act of 1802 was enacted to restrict the sale of alcohol to indigenous people, but it failed because of lack of enforcement. This act was amended in 1822 to allow for search and seizure of alcohol being taken into Indian Territory by non-Indian traders (Prucha 1962; Mason et al. 1985).

In 1823, the Office of Indian Affairs was established within the War Department, without congressional approval, to develop and implement policy toward indigenous people (Nies 1996). This office would be the forerunner to the Bureau of Indian Affairs (BIA).

By 1832, sale of alcohol in Indian country was prohibited, a practice that would continue, at least on paper, for more than a century (Mason et al. 1985; Prucha 1990; Daisy et al. 1998). Despite these laws, army nego-

tiators continued to use alcohol to encourage the signing of treaties throughout the 19th century. In the 20th century, the United States attempted to legislate abstinence nationwide with the passage of the 18th Amendment (Prohibition) to the Constitution. When this failed, the amendment was repealed in 1933. However, several Western States with reservations elected to continue a local prohibition denying alcohol to Indians. These State-imposed restrictions were not rescinded until 1954, and even then, many Indian reservations elected to remain "dry"; several maintain local prohibition statutes to this day (Fuller 1975; May and Smith 1988).

#### THE ERA OF ALLOTMENT AND FORCED ASSIMILATION

In 1871, the U.S. Congress ended the President's authority to negotiate treaties with Indian tribes. By this time, the buffalo were nearly extinct and most Indians had been pushed off their ancestral lands into wilderness pockets or reservations. Traditional subsistence methods had been irrevocably altered, and the indigenous population was largely subjugated.

The new goal of the Government in the latter half of the 19th century was to assimilate Native people into white society. According to the Commissioner of Indian Affairs during the 1870s, Indians lacked "forethought" and "intellectual tastes" and were unable to control their "strong animal appetites" (Walker 1872). Thus, tribes were relocated to reservations, where they were subjected to a coer-

cive assimilation which sought to eradicate tribal customs and "destroy the 'Indian' in the race in favor of the 'man'" (Berkhofer 1978, p. 171). This was an expression of European social views that Indian identity, attached as it was to alien cultures and heathen worship practices, needed the civilizing influence of European culture in order to emphasize the individual rather than the community. In order to "civilize" or acculturate the Indian, there was an intense movement to educate Indian children in European language, religion, and customs and to turn nomadic tribesmen into farmers. Prucha captured this philosophy cogently:

It was understood that the whites, already blessed with a high Civilization, had a responsibility to bring these blessings to their less fortunate red brethren. In the early days of the Continental Congress, the doctrine received formal approval in a resolution of 1776 which declared that "a friendly commerce between the people of the United Colonies and the Indians, and the propagation of the gospel, and the cultivation of the civil arts among the latter, may produce many and inestimable advantages to both" (Prucha 1962, p. 214).

The first boarding schools built for Indian children were started in Hampton, Virginia, in 1878 and in Carlisle, Pennsylvania, in 1879, with the goal of instilling U.S. cultural val-

ues in place of indigenous belief systems (Nies 1996). A policy of forcibly putting Indian children up for adoption by white families was also in practice at this time. Thus began a mass migration of Indian children away from their parents and reservations, disrupting Indian family life and cultural transmission for several generations (Wax et al. 1972; Hoxie 1992). On the reservations, the first tribal police forces were established in 1885 in an effort to weaken the authority of traditional healers and tribal leaders. This was accomplished by training tribal police, who were employees of the BIA, to enforce Federal law as the new tribal law, superseding tradition and custom (Hagan 1966; Nies 1996). The imposition of federally mandated laws, enforced by an agency police, along with the establishment of "representative" tribal councils elected by the people, severely undercut the authority of those to whom the Indians had traditionally looked for direction, including hereditary chiefs, village elders, and medicine men (Gates 1973; Wilkinson 1987).

There was a strong sentiment that the reservation system had been unsuccessful in its mission to "civilize the savage" and that the Indian needed to be rescued from himself (Morgan 1990). This, in conjunction with the belief in racial superiority and Manifest Destiny, provided the rationalization the Government needed to eliminate the trust relationship between the United States and the sovereign Indian nations. The vehicle for accomplishing this was the land allotment acts of the late 1800s.

In 1887, Congress passed the General Allotment Act, also known as the Dawes Act.<sup>2</sup> It was believed that granting land parcels to individuals and families would shift reservation land from communal to individual ownership and aid in divorcing American Indians from their "habits of nomadic barbarism" and "savagery" (Otis 1973). It was also believed that introducing the Indian to individual ownership of land would more quickly help with assimilation into the white culture (Funke 1976). Traditional medicine and religious practices were also outlawed by the act. Indian identity was to be determined by tribal "enrollment,"<sup>3</sup> and enrolled tribal members were allotted a small acreage of land to farm. If, however, tribal members did not farm (i.e., improve the land), then the land could be taken from them.

Enrollment was a matter of contention by many Indians, who did not want whites to have a hand in defining Indian identity. Moreover, some whites fraudulently sought enrollment in order to obtain rights to Indian property. This resulted in a large transfer of Indian lands to white settlers.<sup>4</sup> Four years after the original act, it was amended to permit tribes to lease allotments, thus allowing non-Indians greater access to and redistribution of Indian lands (Prucha 1990).

At the time of the Dawes Act, the population and culture of indigenous people seemed to be under assault from many quarters. Families were being split, corruption abounded in those charged with the care of Indians, and the Government had forced

and reinforced dependency on Washington among the reservation-based groups. Even though the possession and use of alcohol was against the law for all Indian people, drinking and alcohol-related social problems increased markedly on reservations and among Alaska villagers (Mindell 1968; MacAndrew and Edgerton 1969; Winkler 1969; Brown 1980). By the end of the 19th century, the stereotype of the "drunken Indian" was firmly implanted in the collective American consciousness.

With the dawning of the 20th century, the move toward dissolving the legal obligations of the Federal Government toward Indian nations continued. In the 1903 *Lone Wolf* decision, the Supreme Court decreed that the Federal Government had the right to annul the stipulations of an Indian treaty (Hoxie 1984). Prucha (1990) noted that this decision superseded the Treaty of Medicine Lodge (1867), which provided that no part of the Kiowa-Comanche Reservation could be ceded without the approval of three-fourths of the adult males. However, with passage of the Dawes

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<sup>2</sup> *The primary author of the General Allotment Act of 1887 was Senator Henry L. Dawes, and so it became generally known as the Dawes Act. The law authorized the President to survey and allot Indian lands and declared that Indians who received allotments were citizens of the United States. Each head of household was to receive one-fourth of a section; a single person over the age of 18 or an orphaned person under 18 was to receive one-eighth of a section; and all other single persons were to receive one-sixteenth of a section. Remaining lands would return to the public domain (Kickingbird and Ducheneaux 1973; Prucha 1990).*

Act, Congress approved the sale of excess tribal lands without the three-fourths approval. This established the precedent that Congress had plenary authority over Indian relations and the power to pass laws abrogating treaty stipulations (Prucha 1990). Congress consolidated its position with the passage of the Burke Act in 1906, which placed the trusteeship for Indian affairs in the hands of the Secretary of the Interior (Prucha 1990).

The Citizenship Act of 1924 unilaterally granted U.S. citizenship to all American Indians. This act was designed to signify that Indians were fully competent and could survive unaided in American society. Instead, American Indians were left without Federal recognition of their rights as members of sovereign nations, and their treaties with the United States were essentially rendered null and void.

Without tribal power or capital, American Indians had lost their land and their means of livelihood. Native land holdings in the United States were reduced from almost 150 million acres to less than 50 million. Of this, more than two-thirds consisted of arid or semi-arid land deemed useless for agriculture, grazing, or other productive purposes (Kickingbird and Ducheneaux 1973).

By the mid- to late 1920s, however, it was becoming readily apparent to some Americans that allotment and assimilation were not producing the desired results of Americanizing the Indian and making him self-sufficient (Prucha 1973). A centralized and unresponsive bureaucracy had replaced tribal governments, but Indi-

ans were still marginalized in American society, rather than becoming accepted and productive members of society. The Meriam Report of 1928 documented the poor status of Indians and condemned the state of affairs produced by allotment and forced acculturation (Deloria 1985). Between 1887 and 1934, Indian peoples became increasingly disorganized and scattered, with their economic, physical, and cultural security being eroded and lost (Funke 1976).

#### INDIAN REORGANIZATION AND NEW DEAL POLITICS

The Wheeler-Howard Act of 1934, better known as the Indian Reorganization Act (IRA), reversed this grim state of affairs. This act, based on the idea of cultural pluralism, revitalized Indian communities and radically changed America's Indian policy (Funke 1976; Philp 1977; Prucha 1990). Devised by John Collier, the Commissioner of Indian Affairs

<sup>3</sup> Enrollment continues to the present day and is governed by BIA policy and tribal guidelines (see Prucha 1990, especially pp. 250-251 and 261, on tribal membership and enrollment guidelines). Enrollment is an official list of every member of the tribe, determined largely by ancestry, or blood quantum. Tribal membership may require as much as 100 percent "Indian blood" (i.e., of that tribe) or as little as one-sixteenth, depending on tribal history of contact and admixture. To qualify for Federal programs, the blood quantum is usually 25 percent minimum, and an individual must have a card stating official enrollment in one of the federally recognized tribes.

<sup>4</sup> The massive land transfer came about because any unallotted lands, originally set aside in treaty provisions as reservation lands, could be sold by the Government.

appointed by President Franklin D. Roosevelt, the IRA abolished allotment and allowed Indians to establish local self-governments on the reservations. Collier, a social worker and adult educator, believed that the goal of Government policy should not be to absorb Indians into white society but to maintain Indian cultures on their communally owned lands (Collier 1963; Philp 1977). Some Indians and historians believe that the Government had other motives for passing this legislation.

What had previously been considered useless reservation land was in fact rich in natural resources. Only by retaining its paternalistic trust relationship with Indian nations could the U.S. Government have continued control of these resources. Thus, in this interpretation, reorganization was merely an attempt to maintain colonial rule over the reservations, hidden under the sophisticated facade of New Deal liberalism (Churchill 1996).

Regardless of the impetus for the IRA, as of 1934, participating Indian nations were once again federally recognized and were granted some measure of nominal self-determination. If the majority of a tribe voted to accept reorganization, lands deemed "surplus" but never settled under allotment would be restored to tribal ownership and the tribe would receive a federally approved constitution and bylaws for their reservation government (Taylor 1980). Out of 245 recognized tribes, 172 voted for reorganization, and by 1940 a system of colonial governance was in effect on the majority of Indian reservations.

## TERMINATION AND RELOCATION

Congress regretted the IRA almost as soon as it was passed and sought its repeal. Members of the House of Representatives cut appropriations to a minimum level and refused to allow the concept of tribal self-government to have any chance for sustained growth (Deloria 1985). In a return to the guiding philosophy of the late 19th and early 20th centuries, assimilation was again seen as the answer to the "Indian problem." Congress passed House Resolution 108 in 1953, a measure that withdrew Federal support from selected Indian tribes<sup>5</sup> who were believed to be able to survive without Government assistance. This policy was referred to as the "termination" act (Prucha 1990). Under this policy, many Indians were suddenly left landless, poor, and unemployed (Officer 1971; Fixico 1986).

The termination policy was augmented by the BIA's Relocation Program. Relocation efforts, originally conceived of as an off-reservation job placement service, began in 1948 on the Navajo and Hopi reservations. Urban employment was secured with the help of Federal offices in Denver, Los Angeles, Phoenix, and Salt Lake City. In 1950, Congress first appropriated funds for this program and relocation efforts were extended (Officer

<sup>5</sup> *The tribes included the Flathead Tribe of Montana, the Klamath Tribe of Oregon, the Menominee Tribe of Wisconsin, the Potawatami Tribe of Kansas and Nebraska, and those members of the Chippewa Tribe residing on the Turtle Mountain Reservation, North Dakota (Prucha 1990, p. 233).*

1971; Danziger 1991). Following the passage of H.R. 108, the Government further extended these services to other poverty-stricken tribes, urging Indian people to leave the reservations and take up urban residence (Prucha 1990). In support of this policy, Congress passed the 1956 Relocation Act (Public Law 84-959), providing funds to establish job-training centers in urban areas. What was first identified in 1952 as the BIA's Relocation Program was renamed the Employee Assistance Program in 1954, although funding for this was not approved until 1956 (Officer 1971).

In return for the Government's help in relocating to cities, American Indians were asked to sign agreements stating that they would never return to their respective reservations to live. However, poor language skills, lack of work experience, and confinement to urban ghettos led to about a third of the relocatees returning to their home reservations. Nevertheless, the program did result in large numbers of Indians moving to major metropolitan areas throughout the United States, where an urban legacy remains today (Waddell and Watson 1971; Danziger 1991; Weibel-Orlando 1991). It is estimated that approximately 55 percent of the Indian population now live in metropolitan areas, and there is no indication that this trend is abating (National Congress of American Indians 1991).

### THE HISTORY OF INDIAN HEALTH CARE IN THE UNITED STATES

With the creation of the reservation system, the Federal Government

assumed responsibility for the medical care of Indian peoples. This policy gradually evolved in the mid-1800s and, as a part of the treaty negotiations establishing reservations, provisions for medical care were included. Originally, the responsibility for health care of American Indians resided in the hands of the military and was largely in the form of administration of medical services, such as vaccinations against smallpox. This was both to protect American soldiers from infectious diseases (Stearn and Stearn 1943; Mail 1978) and to try to reduce the high mortality from epidemic diseases for which the Indians had no natural protection (Thornton 1987).

In 1849, the Department of the Interior was created by Congress to administer all the frontier land acquisitions of the U.S. Government, and Indian services were transferred from the War Department to the newly created department (Mail 1978; Mason et al. 1985). With this shift, health care delivery for Indians improved over the meager services provided by the army, but it was still vastly inferior to that for the majority of the American population.

Tribal governments were controlled by "Indian agents" who had complete authority over scarce resources provided by Congress to honor the provisions for health care promised in the treaties. However, administration of Indian affairs, especially on reservations, was so plagued by corruption that in 1870, President Ulysses S. Grant gave control of some Indian agencies to various Christian denominations in response to legislation out-

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lawing the use of army officers as tribal agents (Beaver 1988; Nies 1996).

Congress made the first Federal appropriation specifically for health services for American Indians in 1911, following a report by Commissioner of Indian Affairs Robert Valentine (Prucha 1990). However, it made no provision for recurring monies to be allocated for this purpose until the passage of the Snyder Act of 1921. This act authorized the first regular appropriations of funds for the "relief of distress and conservation of health" of American Indians (Prucha 1990, p. 320). This landmark law resulted in the creation of the Division of Indian Health within the BIA in 1924. In 1954, the Federal Government decided to transfer the responsibility for provision of health care from the BIA to the Department of Health, Education and Welfare, U.S. Public Health Service, under the Transfer Act of 1954, Public Law 83-568. As a result, the Indian Health Service (IHS) was established to carry out wide-ranging responsibility for Indian health, including medical, dental, public health, and environmental health services (Mail 1978).

#### **COLLABORATIVE HEALTH SERVICES: THE I/T/U SYSTEM**

According to IHS director Michael Trujillo (1999), the agency operates a health services delivery system designed to provide preventive, curative, rehabilitative, and environmental services. The IHS emphasizes that environmental services are critical for improving the health of the Native population. Thus, the IHS has been in

the unique position among Federal health agencies of allocating money for the construction of adequate sanitation disposal and running water facilities as a preventive measure.

Health and medical care for American Indians is currently available through the IHS in the 35 States that contain Indian reservations or Alaska Native corporations. The IHS delivery system is divided into 12 administrative jurisdictions, called areas, based on geopolitical boundaries rather than traditional cultural and subsistence regions (figure 1). The 12 areas are further divided into 127 service units, each of which may include several smaller satellite facilities and field health stations.

With an annual appropriation of approximately \$2.2 billion, the IHS employs 15,800 people, 62 percent of whom are of American Indian or Alaska Native descent (IHS 2001). As of March 1996, IHS maintained 37 hospitals, 64 health centers, 50 health stations, and 5 school centers (IHS 1999*b*). In locations where the IHS does not have its own facilities, or is not equipped to provide a needed service, it contracts with local hospitals, State and local health agencies, tribal health institutions, and individual health care providers. In all, the IHS provides health care services for approximately 70 percent of the nation's Indian population, both on reservations and through a network of urban clinics.

The mid-1970s saw the passage of two pieces of legislation that have strongly affected Indian peoples. The Indian Self-Determination and Educa-





funding, such as Medicaid reimbursement, grants from Federal and State agencies as well as private foundations, and contracts (Wolff and Marx 1999).

In 1988, the Indian Self-Determination and Education Assistance Act was amended, allowing tribes to *compact* with the Federal Government to assume more independence in the management of their programs. The 1990s saw many interesting developments in the organization of health care for American Indians, as more and more tribal governments expressed interest in operating their own health services. Approximately one-third of all American Indians eligible for IHS care now receives their health services directly from tribally managed health programs (IHS 1997*d*). As of March 1996, American Indian tribes and Alaska Native corporations administered 12 hospitals, 116 health centers, 3 school health centers, 56 health stations, and 167 Alaska village clinics (IHS 1999*b*). These changes represent the first major reorganization of the IHS since its creation in 1954. Collaborative relationships between the IHS and tribes have resulted in the redesign and transformation of the traditional Federal-Indian relationship, creating more of a partnership between IHS programs (I), tribes (T), and urban programs (U). Thus, this new relationship between the Government and the sovereign tribes is sometimes referred to as the I/T/U system (Roubideaux 1998).

#### ALTERNATIVE SOURCES OF HEALTH CARE

Similar to other Americans, Indians may be eligible for other sources of

health care, depending on their job, income level, health status, and tribal or community resources. These other sources include Medicaid, the State Child Health Insurance Program (SCHIP), Medicare, private insurance and managed health care companies, and traditional Indian medicine. Most tribal employers make insurance plans available so that tribal employees with off-reservation access to medical care have the option of selecting their own providers or using the IHS or tribal medical system. Older Indians (only 6 percent of the Indian population [IHS 1997*c*]) are eligible for Medicare.

## CONTEMPORARY ISSUES

### DEFINITIONS OF INDIANNESS

Throughout the years, definitions of "Indian" have ranged from the biological to the social and cultural. Before the arrival of Europeans in North America, there was no generic term for the indigenous population. They defined themselves in relation to their individual families and tribal communities. The Europeans, however, labeled the Natives they encountered on their early voyages "Indians," mistakenly believing that they had found the Asian subcontinent of India, and the name endured.

During the early years of contact, Indians were defined by the characteristics commonly ascribed to them: simple, uninformed, lazy, inferior, savage, and so on (Thornton 1987). In fact, the U.S. Supreme Court decreed in 1877 that the Pueblo were not to be considered Indians because they

were "a peaceable, industrious, intelligent, honest, and virtuous people" (quoted in Cohen 1971, p. 22).

As the Indian population became more mixed and dispersed over a larger geographic region, new definitions emerged. Early in the history of the United States, it became critically important that the Government define who an Indian is, because of the legal responsibility incurred by the Government when negotiating treaties with tribal nations. Biological explanations of race became a socially constructed tool for separating people into discrete categories (Mihesuah 1999), which also had political implications.

Using blood quantum, in this case the biological degree of Indian ancestry an individual possesses, the Government was able to deny many mixed-bloods access to Indian identity, thereby decreasing tribal power and autonomy (Churchill 1999).

The debate surrounding who can legally claim Indian identity continues today. According to the Federal Government, "an Indian shall be deemed to be any person of Indian descent who is a member of any recognized Indian tribe now under Federal Jurisdiction" (Cohen 1971, p. 5). In general, it is left to individual tribal nations and their constitutions to determine membership. The major criteria used to define an Indian, and maintenance of tribal identity today, are based on descent, language, kinship, and cultural heritage. Tribal enrollment requirements vary widely among tribes but most often involve some combination of the following components: blood quantum, lineage, allotment status,

and residence. If an individual meets the membership qualifications for a particular tribe, he or she is said to be an enrolled member and is eligible to receive all benefits granted to official members of the tribe.

## DEMOGRAPHICS

The American Indian population is young, with almost half being under 24 years of age (IHS 2000). The 2000 census estimates that 2.48 million Americans (0.9 percent) report their only race to be American Indian or Alaska Native; 4.12 million people (1.5 percent) report their race to be American Indian or Alaska Native in combination with one or more other races (Greico and Cassidy 2001). The current IHS beneficiary population is estimated to be about 1.5 million people, with a rate of natural increase of 2 percent per year (IHS 2000). The Indian population residing in the IHS service areas is younger than the U.S. all-races population, based on the 1990 census. For Indians, approximately 33 percent of the population is younger than 15 years whereas only 6 percent is over 64 years of age. In contrast, for U.S. All-Races, the rates are 22 percent under the age of 15 and 12 percent over the age of 64 years (IHS 2000). The Indian median age is 24.2 years, compared with 32.9 years for the U.S. all-races median (IHS 2000).

The IHS jurisdiction with the largest Indian population is the Oklahoma area, which in 1998 had 303,404 people, or 21 percent of the total service population. Table 1 gives the estimated Indian service population by administrative jurisdiction (area).

American Indians are a diverse group, representing more than 550 federally recognized tribal nations that range from fewer than 100 members to more than 100,000. In addition, there are numerous tribes, bands, and Indian villages not recognized by the Government (Champagne 1999). These include smaller bands or tribes who declined to participate in the treaty negotiations or who were not recognized as being distinct

entities. The non-federally recognized Indians also include tribes in the Eastern and mid-Atlantic United States. Some of these tribes negotiated arrangements with colonial governments and thus were not recognized when the United States was established. At least one tribe may be denied recognition by the National Congress of American Indians for political reasons—the Lumbee of North Carolina.<sup>6</sup>

Table 1. Indian Health Service (IHS) Beneficiary Population by IHS Area.

IHS Area	Estimated Population 1998
Aberdeen (includes Iowa, Nebraska, North Dakota, and South Dakota)	96,772
Alaska	104,305
Albuquerque (includes Colorado, New Mexico, and parts of Texas)	79,914
Bemidji (includes Indiana, Michigan, Minnesota, and Wisconsin)	80,696
Billings (includes Montana and Wyoming)	55,953
California	125,974
Nashville (includes Alabama, Connecticut, Florida, Louisiana, Maine, Massachusetts, Mississippi, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Tennessee, and parts of Texas)	73,854
Navajo (includes portions of Arizona, Colorado, New Mexico, and Utah)	216,298
Oklahoma (includes Kansas, Oklahoma, and parts of Texas)	303,404
Phoenix (includes Arizona, Nevada, and Utah, excluding the Navajo and the Tucson Areas)	142,071
Portland (includes Idaho, Oregon, and Washington)	150,401
Tucson (parts of southern Arizona)	27,979
All areas	1,457,621

Source: Adapted from Indian Health Service (IHS). *1997 Trends in Indian Health*. Rockville, MD: IHS, Division of Community and Environmental Health, 1997. pp. 31–32.

Cultural anthropologists have divided the Native American populations into culture areas, contiguous regions that reflect the shared ecological habitat, subsistence pattern, social organization, and religious beliefs and practices of its inhabitants. There are 10 such culture areas in North America: Arctic, Subarctic, Northwest Coast, Great Basin, California, Plateau, Plains, Southwest, Southeast, and Northeast (Sturtevant 1978-90).

The majority of Indians (55 percent or more) live in metropolitan areas, with only 22 percent of the population living on reservations and tribal trust lands, 10 percent in tribal jurisdiction areas in Oklahoma, 3 percent in designated tribal areas in other States, and 2 percent in Alaska Native villages (Paisano 1993). The remainder may live in rural areas adjacent to reservations or count themselves as members of the non-federally recognized tribes. More than half of the American Indian population lives in six Western States: Oklahoma, California, Arizona, New Mexico, Alaska, and Washington. The three largest tribal groups in the United States are the Cherokee, the Navajo, and the Sioux.

### HEALTH STATUS

In the last 40 years, there have been remarkable gains made in improving the health status of American Indians. Substantial decreases in overall mortality rates have been documented, along with a shift in disease patterns from infectious to chronic diseases (Wolsey and Cheek 1999). However, health disparities between Indians and the U.S. general population remain,

and Indians continue to experience higher mortality rates.

According to Federal Government statistics, Indians today are the poorest segment of the American population, with the lowest annual and lifetime incomes, the highest rate of unemployment, the lowest rate of pay when employed, and the lowest level of educational attainment of any North American aggregate. In addition, Indians suffer the highest infant mortality rate; the greatest incidence of malnutrition, diabetes, and death by chronic liver disease, cirrhosis, tuberculosis, influenza, and pneumonia; and the highest rates of homicide and suicide (IHS 1996).

The IHS has identified alcohol and substance abuse as the most significant health problem in American Indian communities. The complexities around the use of alcohol by Indian peoples are the subject of this monograph. It is widely believed that few Indian families remain unaffected, either directly or indirectly, by alcohol abuse, and the social and cultural devastation is dramatic. In response, the IHS has initiated a number of programs for preventing alcohol misuse and treating alcohol dependence. The IHS is currently funding more than 200 alcohol abuse and dependence programs serving Indian reservations

<sup>6</sup> *The Lumbee Tribe provided safe haven for African slaves, and there was considerable intermarriage. The National Congress of American Indians consistently rejects Lumbee petitions for recognition, despite anthropological evidence that the Lumbee are a tribe. One can surmise that this may be due to discrimination toward Indians who have strong African traits as a result of intermarriage.*

and urban communities (IHS 1999a). However, the IHS alone does not have the resources to battle the widespread alcohol problems. The current budget allows health care funding for Indians at about 40 percent of the rate for the rest of the American population. In 1996, the per capita expenditure for the Indian Health Service was \$1,200, compared with \$3,046 estimated by the Health Care Financing Administration for the general population (IHS 1997a). Tribes must rely on other sources to meet needs, including State and local services when available.

Despite these obstacles, American Indian communities are coming together to address the problems they face as a result of alcohol. The rates of alcohol-related mortality and accidental injury deaths, while still much higher than the national average, have decreased significantly since the 1970s. In addition, an awakening sense of pride and empowerment among Indian peoples is a sign of hope for the future and portends further improvements in the health status of American Indians (Duran and Duran 1995; Cruz 1999).

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POLICIES, AND RESEARCH**

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## Chapter 3

# The Epidemiology of Alcohol Use and Alcohol-Related Health Problems Among American Indians

Thomas K. Welty, M.D., M.P.H.

*KEY WORDS: Native American; AODR (AOD [alcohol or other drug] related) mortality; AOD use; AODR injury; epidemiological indicators; community-based prevention; adolescent; female; alcohol use disorder in the elderly*

The usual approach to describing the epidemiology of health problems in a given group is to compare morbidity, mortality, and risk factor prevalence rates with those of other groups. Such comparisons have been useful historically to identify health problems that occur more commonly in certain populations. The comparative information can then be used to obtain resources to address health problems that occur frequently and have adverse consequences.

Until the middle of the 20th century, infectious diseases were the primary cause of American Indian morbidity and mortality (Sievers and Fisher 1981; Kunitz 1996). Tribal and national epidemiologic surveys provided data that were used to

secure Federal funding to develop highly successful interventions against trachoma, tuberculosis, infant diarrhea, hepatitis A and B, *Haemophilus influenzae* meningitis, and other infectious diseases that had plagued Indian communities.

Traditional diets, which were low in calories and fat and high in fiber, and vigorous physical activities required for survival likely protected Native peoples against chronic diseases. Increased Indian life expectancy, due to the decreasing toll of infectious diseases, and the change to a diet with higher calories and fat and to a more sedentary lifestyle have resulted in emerging epidemics of diabetes, cardiovascular disease, and end-stage renal disease (Rhoades et al. 1987).

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Community-based interventions are needed to prevent these chronic diseases. These interventions must include not only education and access to medical care but also promotion of traditional values and customs that community members believe are important in providing some protection against chronic diseases (LeMaster and Connell 1994; Klein et al. 1999). One of the most widely known examples is the revival of the tradition of running in Zuni Pueblo as a means of combating obesity and diabetes (Leonard et al. 1986). Other successful community-based strategies have been developed in Indian communities to prevent alcohol-related injuries and to combat chronic alcohol misuse (Rhoades et al. 1988; Arbogast 1995; May 1995; May and Moran 1995), and these strategies may also help prevent chronic illnesses. The best approach may be in holistic interventions that promote healthier lifestyles consistent with Indian traditions (Lefley 1982).

In order to obtain support for such interventions, comparisons of morbidity, mortality, and risk factor prevalence rates in Indians with those rates in other populations are essential. In this chapter, some comparisons have been included to demonstrate the disparity between the health status of Indian communities and the health status of other racial and ethnic groups. In addition to presenting national data for Indians, I also examine intertribal and regional differences to show that there is considerable within-group variation, and I discuss alcohol use among youth, women,

and the elderly. Finally, alcohol misuse can result in unintentional injuries (e.g., from motor vehicle crashes) and alcohol-related birth defects; these and other consequences are discussed, as well as implications for preventive and clinical programs.

## ALCOHOL-RELATED MORTALITY

The 1990 census reported over 2 million self-identified Indians in the United States (Paisano 1993). The Indian Health Service (IHS) currently has an estimated service population of nearly 1.5 million, with services provided through 12 regional jurisdictions (called areas; see figure 1 and table 1 in chapter 2) and several primary care clinics in major urban centers. A service-eligible Indian beneficiary is defined by both the Federal agencies and the guidelines included in tribal bylaws and policies. The most widely accepted definition of an Indian is an individual who can trace his or her descent from individuals who were members of sovereign and distinct tribes (Prucha 1990). Indian beneficiaries may be required to live on or near federally recognized reservations to receive Federal benefits, although since the 1950s Federal programs and economic pressures have increased the migration from the reservations to urban centers (Waddell and Watson 1971; Weibel-Orlando 1991). By the mid-1990s, more than half of the Indian population lived off-reservation.

The IHS has been the major record-keeping agency for Indian health statistics, and although their

published data do not represent all Indian people, they provide the best overview of Indian health conditions for this unique population. The IHS annually prepares Indian health data, including age-adjusted mortality rates. These rates are estimated from death certificates of Indians filed with the various State health departments and include only the residents of those counties that constitute the IHS service areas. Annually, the health departments forward their vital data to the National Center for Health Statistics (NCHS). Once the data are compiled and entered into an electronic file, a copy of the complete U.S. vital data file is forwarded to the IHS Statistical Branch, which uses these data to calculate age-adjusted mortality rates for Indians as compared with the U.S. All-Races rates (IHS 1997a, 1997b).

Analysis of the IHS mortality data, while the best available, is hampered by miscoding of Indian race on death certificates, especially in those areas distant from reservations. The miscoding leads to spuriously low mortality rates for Indians, except when the death is alcohol related. For example, in one report, deaths from alcohol misuse were correctly classified 97 percent of the time when the deceased was Indian. Other causes of death were much more frequently miscoded for race, with the most frequent racial misassignment being white (Frost et al. 1994). In another example, Grossman and colleagues (1994) reported that in a study of racial misclassification, nearly one-third of clients of an urban Indian

clinic in the Pacific Northwest were classified as members of races other than Indian on their death certificates. This compares with 12 percent misclassification among rural Indians in the same State who were registered through reservation-based clinics. Such disease-specific coding for alcohol and not other diseases could serve to reinforce racial stereotypes while overlooking other preventable causes of death among Indian people. The most pronounced racial miscoding occurs in California and in Oklahoma.

The IHS has now developed factors to adjust for miscoding of Indian race on death certificates, based on a study that compared IHS patient registration records with those of the National Death Index, a national death file maintained by NCHS. The IHS first used these factors in the 1997 *Regional Differences in Indian Health* (1997a) and *Trends in Indian Health* reports (1997b). In these reports, the adjustment factors were applied only to the latest 3-year data period, 1992-94. The IHS plans to extend the adjustment factors to all data years in subsequent editions of these reports. This should provide some historical sense of alcohol use over time that is usually not available in prevalence reports.

After adjustment for racial miscoding, the 1992-94 overall age-adjusted mortality rate was 35 percent higher for American Indians than for U.S. All-Races (figure 1), and deaths from alcoholism as defined by NCHS were nearly 7 times as great (figure 2). Alcoholism deaths as defined by NCHS include deaths from alcoholic

liver disease/cirrhosis and from a number of other nontraumatic health problems that are caused by alcohol abuse (IHS 1997*b*). More Indians die from alcoholism in the Aberdeen (112.7) and Billings Areas (75.8) of the IHS than the IHS average rate per 100,000 of 45.5 and the U.S. All-Races rate of 6.7 (IHS 1997*a*). Alcoholism death rates for Indians declined 47 percent from 1979-81 to 1985-87. Since then they increased 27 percent until 1992-94 (figure 3). Alcoholism deaths occur more commonly among men than women, with the highest rates occurring in the age group 45-54 years (see figure 4).

In the only study of this nature conducted to date, no relationship

was found between the funds allocated to IHS for alcohol treatment programs and the changes in alcoholism mortality rates during this time period (Burns 1995). More research is needed to examine and evaluate the relationship between funding for substance use treatment and injury prevention and reductions in alcohol-related morbidity and mortality rates in Indian communities.

Total mortality and alcoholism mortality rates differ for the IHS areas (see figures 1 and 2). Also, while alcohol-related mortality has decreased nationally for Indians, it has not decreased in every area; for example, alcohol-related mortality rates for New Mexico Indians have not

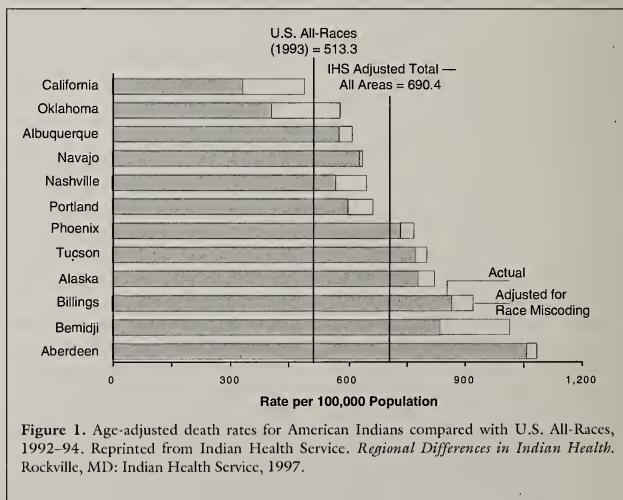


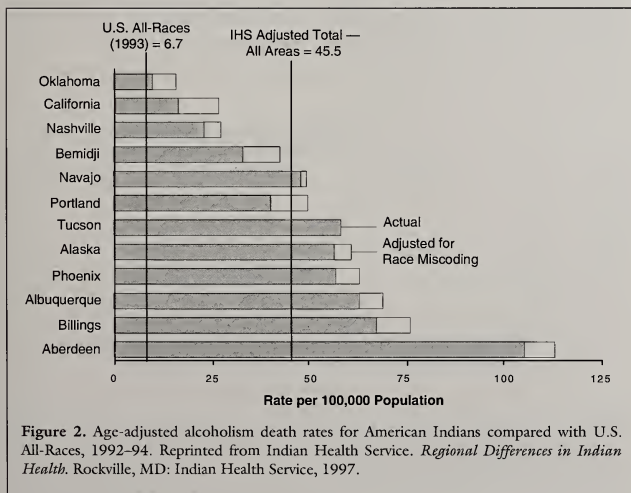
Figure 1. Age-adjusted death rates for American Indians compared with U.S. All-Races, 1992-94. Reprinted from Indian Health Service. *Regional Differences in Indian Health*. Rockville, MD: Indian Health Service, 1997.



declined and are higher than rates for non-Hispanic Whites and Hispanics in New Mexico (Gilliland et al. 1995). Although premature deaths as measured by years of potential life lost (YPLL) rates have decreased by more than 50 percent since 1972-74, they are still 73 percent higher for Indians than for U.S. All-Races after adjustment for miscoding of Indian race on death certificates (IHS 1997b). Misuse of alcohol is believed to be the single most important contributing factor to these elevated rates of premature mortality that disproportionately claim the lives of Indian adolescents and young adults.

In addition to the alcoholism deaths, a large number of deaths from other causes are alcohol related and

must be considered in assessing the effect of alcohol abuse on mortality (May 1989). It is estimated that 65 percent of Indian deaths resulting from motor vehicle crashes and 25 percent of deaths resulting from other unintentional injuries are alcohol related (May 1996; see also chapter 15 in this monograph for a discussion of alcohol-related motor vehicle fatalities). Although mortality rates from injuries and poisonings have declined 50 percent since 1972-74, they were 2.4 times as great among Indians than the rest of the U.S. population in 1992-94 (IHS 1997b). In addition, it is estimated that 80 percent of suicides (Grobsmith 1994) and 93 percent of homicides occurring in Indian communities are associated with alco-

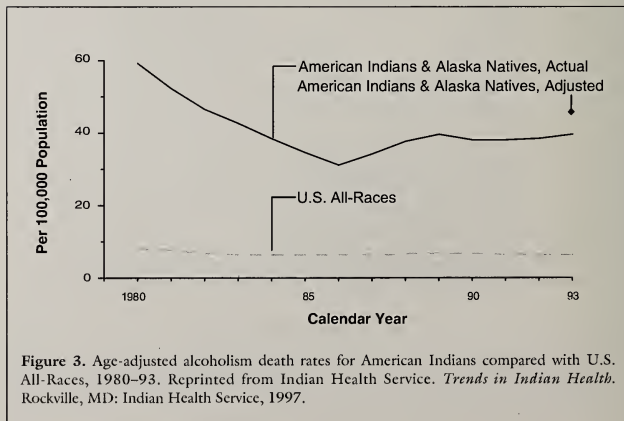


hol (Bachman 1992). The 1992-94 age-adjusted rate for suicide is 70 percent higher for Indians than for the general population, and, for homicide, is 41 percent higher for Indians (IHS 1997b). The age-adjusted suicide rate for Indians decreased 29 percent from the highest rate in 1975-77 to its lowest level in 1984-86, but increased 8 percent from then until 1992-94. The age-adjusted homicide rate for Indians decreased 45 percent from 1972-74 to 1992-94.

Although alcohol-related causes of death remain higher for Indians than for U.S. All-Races, the decreases noted above may have been the result of community-based interventions designed to reduce alcohol misuse and to prevent injuries, the increased availability of alcohol treatment and mental health programs, and the increased awareness of problems related to alco-

hol and other drug (AOD) misuse. Many tribes have publicly acknowledged the severity of the problem and have prioritized prevention and control efforts at both the individual and community level (May 1995). Some of these efforts are described later in this chapter, in the section Preventive and Clinical Programs.

In addition to the main causes of death associated with alcohol misuse, a number of other health problems may be partially attributed to AOD misuse. Infant mortality rates vary greatly by IHS area (IHS 1997b). Although not a major cause of Indian infant deaths, a small proportion of infant deaths is related to child abuse, and the majority of those cases are also related to alcohol misuse (DeBruyn et al. 1988). After adjustment for miscoding of Indian race on death certificates, Indian infant mortality rates in



1992-94 were 30 percent higher than the U.S. All-Races rates, and most of the excess is related to higher rates of post-neonatal mortality (IHS 1997b).

The majority of post-neonatal deaths are due to sudden infant death syndrome (SIDS). The rates of SIDS vary greatly between groups of Indians living in various regions of the country; the rates are highest among the Northern Plains Indians and Alaska Natives and lowest among Southwestern Indians. Recent findings from the Aberdeen Area Infant Mortality Study (conducted from 1992 to 1996 by the Aberdeen Area Indian Health Service, Centers for Disease Control and Prevention [CDC], and National Center for Child Health and Development) indicate that maternal alcohol misuse during pregnancy is a risk factor for SIDS. Mothers who continue drinking heavily throughout

pregnancy seem to be at highest risk of having a SIDS death.

In addition to SIDS, alcohol use is associated with other problems affecting children. Alcohol and tobacco use during pregnancy, as reported on birth certificates, was associated with significantly lower birth weights for Alaska Native babies (Murphy et al. 1996). The problems of fetal alcohol syndrome and other alcohol-related developmental disorders are well documented among Indians (see chapter 13).

Although cardiovascular diseases are generally not attributed to alcohol misuse, binge drinking and recent drunkenness have been associated with sudden death (Kozarevic et al. 1982). Many of these sudden deaths are coded on the death certificate as cardiovascular deaths. In addition, chronic alcohol misuse has been associated with hypertension, which in

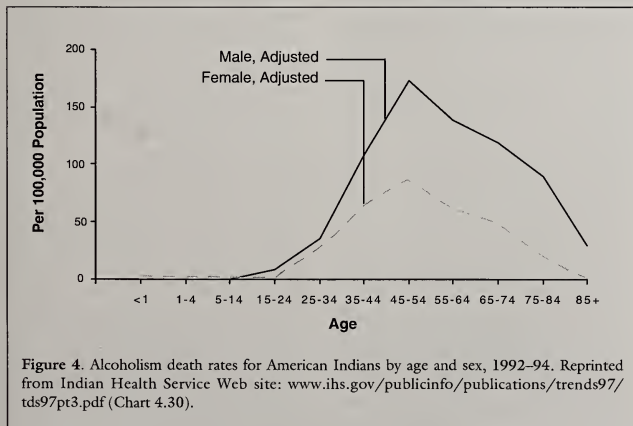


Figure 4. Alcoholism death rates for American Indians by age and sex, 1992-94. Reprinted from Indian Health Service Web site: [www.ihs.gov/publicinfo/publications/trends97/tds97pt3.pdf](http://www.ihs.gov/publicinfo/publications/trends97/tds97pt3.pdf) (Chart 4.30).

turn is a risk factor for cardiovascular disease. Moderate alcohol consumption (one or two drinks per day) may be associated with reduction in the risk of cardiovascular disease morbidity and mortality (Swales and de Bono 1993; Seltzer 1997), but this has not been studied in Indian populations.

Information on alcohol consumption was collected as part of the Strong Heart Study of cardiovascular disease and its risk factors, a study of Indians from 13 tribes in Oklahoma, Arizona, and North and South Dakota. Although the overall prevalence of drinking in this cohort of over 4,500 Indians ages 45–74 was lower than the prevalence for U.S. All-Races (55 percent for Indian men and 32 percent for Indian women vs. 63 percent for men and 41 percent for women nationally), study participants commonly reported a pattern of sporadic binge drinking, consuming five or more drinks on a single occasion (Welty et al. 1995). Among the study participants who drank alcohol in the last year, 80 percent of the men and 66 percent of the women had drunk five or more drinks on at least one occasion during the last year (Welty et al. 1995). This pattern of drinking has been reported consistently in surveys of alcohol use in other Indian populations and has been associated with many adverse health events (May 1994, 1996; Gill et al. 1997; May and Del Vecchio 1997). Binge drinking was independently associated with multiple psychiatric disorders and with employment, social, physical, and behavioral problems, as well as violence and lawless-

ness in a southwestern tribe (Robin et al. 1998). Because of the numerous adverse effects of alcohol abuse and the high prevalence of misuse in many Indian communities, most professionals working in Indian clinics argue against encouraging use of alcohol for its beneficial cardiovascular effects when consumed in moderation (Friedman 1998).

## ALCOHOL USE AMONG YOUTH, WOMEN, AND THE ELDERLY

### YOUTH

Indian adolescent problem drinking causes great concern among families, educators, health care providers, and tribal authorities. The most comprehensive studies of Indian youth AOD use have been conducted by Gene Oetting and Fred Beauvais at the Tri-Ethnic Center for Prevention Research in Colorado. Their research team has been sampling Indian youth AOD use since 1974 and has documented an increase in girls' drinking patterns in recent years (Beauvais et al. 1989; Beauvais 1992*b*, 1996).

The University of Minnesota Adolescent Health Survey of 13,923 Indians from 50 tribes, conducted between 1988 and 1990, reported on the drinking behavior of boys and girls in grades 7–12 (Blum et al. 1992). The survey, which consisted of 170 self-administered multiple choice questions, indicated that 45 percent of boys and girls in grades 7–9 and 74 percent of boys and 69 percent of girls in grades 10–12 had ever tried

beer or wine. Frequent use of alcohol by boys increased by grade to almost 30 percent by grade 12, while frequent use among girls leveled off at about 15 percent in grades 9–12.

Indian adolescent data may be compared with recent findings reported by the national drug use survey *Monitoring the Future* (Johnston et al. 2000), conducted annually by the University of Michigan Institute for Social Research. This survey reports data on adolescent drug use (including alcohol and tobacco) for grades 8, 10, and 12 by gender and ethnicity (e.g., Euro-American, African American, and Hispanic American). In the most recent *Monitoring the Future* report (Johnston et al. 2000), lifetime prevalence of ever used alcohol was 52 percent of 8th graders, 71 percent of 10th graders, and 80 percent of 12th graders. Compared with 1997 data (54 percent of 8th graders, 72 percent of 10th graders, and 82 percent of 12th graders) (Johnston et al. 1998), there

appears to be a slight decrease in non-Indian student drinking. The prevalence of monthly and daily use showed declines in the 1980s but small increases again in the 1990s (Johnston et al. 2000). The data suggest that the proportion of non-Indian adolescents experimenting with alcohol in the 8th grade is similar to or higher than that of Indian youth.

Because the Indian studies do not use the same data collection methods, direct comparisons cannot always be made. But data from other Indian studies (White 1982; Beauvais et al. 1989) suggest that a smaller proportion of Indian students than non-Indian students is using alcohol experimentally.

For non-Indian adolescents, daily use and binge drinking fell from 41 percent in 1983 to 28 percent in 1993, but now is increasing. Frequent use (prevalence in a 30-day period) by gender declined in the 8th and 10th grades from 1991 to 1997, but

**Table 1.** Thirty-Day Prevalence (%) of Drinking Among Indian and Non-Indian Adolescents.

Grade	Indian (Reservation)		Indian (Nonreservation)		National Sample/ Non-Indian Comparison			
	1988–90		1988–90		1996–97		1998–99	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
8	42.0	43.0	35.0	36.0	15.3	13.5	10.2	8.6
10					28.6	21.7	25.4	19.8
12	56.0	59.0	66.0	54.0	37.9	24.4	47.9	27.7

Note: As reported by Beauvais (1992a, p. 24), 2,383 Indian students responded to the questionnaires. In the non-Indian survey completed in 1997, 15,963 students were surveyed (Johnston et al. 1998; see table 3–1 on p. 42 for sample sizes and response rates); the 1999 survey included 14,056 students (Johnston et al. 2000; see table 3–1 on p. 57 for sample sizes and response rates). For consistency with the Beauvais data, 30-day prevalence data were used from the Johnston et al. reports (a 30-day prevalence is defined as a respondent reporting at least one or more drinks in the last 30 days).

increased by 1.4 percent for boys and 2.0 percent for girls from 1996 to 1997. Among 12th graders, 56 percent of boys and 49 percent of girls reporting using alcohol within the last 30 days (Johnston et al. 1998).

Although 60 percent of Indian adolescents reported that they were non-drinkers or had not used alcohol in more than a year, 10 percent of youth who used alcohol could be considered problem drinkers. Problem drinking among boys went from 3 to 5 percent in the 8th grade to 27.3 percent by the 12th grade, while girls reported problem drinking rates of almost 9 percent in 8th grade to 13 percent by the 12th grade (Blum et al. 1992). The national Monitoring the Future study reports even higher rates of problem drinking among non-Indian adolescents, as shown in table 1, but exact comparisons cannot be made because of differences in time frame and data collection methodology.

Other studies of Indian adolescents suggest that there are serious problems with alcohol misuse. For example, in a study of 150 Northern Plains Indian adolescents who were incarcerated in a reservation-based juvenile detention center, 38 percent were diagnosed as having substance abuse/dependence, the most common diagnosis made using a structured diagnostic instrument (Duclos et al. 1998).

Sporadic binge drinking occurs commonly among college students and is associated with high rates of unintentional injuries, homicide, and suicide (Berkowitz and Perkins 1986; Meilman et al. 1990; Werner and Greene 1992;

Weschler et al. 1995; Miller et al. 1999; Syre et al. 1999; Weschler et al. 1999). Problem drinking manifested by sporadic binges is a national problem among adolescents and young adults. These drinking patterns have been the focus of a number of community-based interventions, but these interventions have not been appropriately modified (if adapted from non-Indian demonstrations), nor have they been adequately disseminated, widely implemented, or evaluated in the Indian communities where they have been attempted.

Often cited as a gateway to alcohol misuse, inhalant abuse is a serious and common problem in Indian children. In non-Indian populations, alcohol is often the gateway drug to misuse of other drugs, but in Indian communities, inhalant abuse often precedes alcohol misuse. Thurman and Green (1997) reported that inhalant abuse was higher for Indian students ages 10–18 years who did not participate in structured activities, especially those that involved participation in traditional tribal activities such as ceremonies and pow-wows. Reed and May (1984) documented the association between inhalants and delinquency. No difference was reported by gender. Inhalant use varies by tribe.

Inhalant use declined among non-Indians across all grades surveyed in the Monitoring the Future survey (Johnston et al. 1998). Eighth grade use declined in 1995 and 1996, 10th grade use declined from 1994 to 1997, and 12th grade use declined from 1993 to 1997. Annual prevalence of reported inhalant use in 1997 was 11.8 percent for 8th graders, 5.7

percent for 10th graders, and 6.7 percent for 12th graders. Retrospective reports by 8th graders show inhalant use being initiated as early as the 4th grade. Eighth grade girls reported inhalant use at slightly higher levels (12.9 percent in 1997) than did 8th grade boys (10.5 percent in 1997), but boys' use exceeded that of girls in the 10th and 12th grades (9.1 percent vs. 8.2 percent and 8.3 percent vs. 5.2 percent) (Johnston et al. 1998).

By comparison, the Voices of Indian Teens survey, reported by May and Del Vecchio (1997), showed a fairly equal gender distribution among Indian inhalant users, and evidence that Indian inhalant users report much heavier alcohol use than non-inhalant-abusing Indian youth. An Indian boarding school survey found that boys begin to experiment earlier than girls; the peak period of risk for solvent use was between ages 10 and 11 for boys and between ages 12 and 13 for girls. (Period of risk is defined as the "age at which the majority of students reported ever having used the specific drug" [Okwumabua and Duryea 1987]). Okwumabua and Duryea (1987) noted that drug prevention education should focus on reducing or delaying the incidence of initial drug use as well as reducing actual use among older users. In the case of inhalants, prevention of initial use is especially critical because prolonged use can permanently damage neurological functioning.

## WOMEN

The use of alcohol by Indian women is an important area for research.

Consistent gender differences in alcohol use have been found not only between the sexes but also among tribal groups (IHS 1997*a*, 1997*b*). However, there is a paucity of research on alcohol use and its sequelae in Indian women, relative to the amount of research on these topics in Indian men. Mail and Silk Walker explore alcohol use in the life of Indian women in chapter 10, and May, McCloskey, and Gossage review fetal alcohol syndrome, a consequence of alcohol misuse during pregnancy, in chapter 13. In this section I provide an overview of Indian women's epidemiology of alcohol use as reported in IHS records.

Indian female life expectancy in 1992-94 was 75.1 years, compared with 78.8 years for U.S. All-Races female life expectancy in 1993; the Indian male life expectancy was 67.2 years, compared with the U.S. All-Races male life expectancy of 72.2 years in 1993 (IHS 1997*a*). In looking at alcohol use by gender, it is clear that alcohol misuse takes a far greater toll on Indian men than Indian women. The age-specific death rates (1992-94) for Indian men and women due to alcoholism and cirrhosis were higher than U.S. rates in all age groups, but Indian men died at greater rates than did Indian women. Yet there are distinct regional differences in alcohol misuse among women. The highest percentage of Indian women drinking during pregnancy is in Alaska, as reported on birth certificates (18 percent), and the lowest is in Oklahoma (2.3 percent), compared with the IHS-wide rate of 5.9 percent and the U.S. All-Races rate of

2.1 percent (IHS 1997*a*). Although the prevalence of alcohol misuse and alcohol-related morbidity and mortality are lower for Indian women than men, rates for Indian women are higher than for U.S. All-Races women.

Abuse of alcohol by women has adverse effects on the fabric of the culture and mores of Indian communities, as well as contributing to the adverse impact that fetal alcohol exposure has on future generations. More research is needed to define patterns of alcohol abuse in Indian women and to learn the best approaches for treatment and prevention.

### THE ELDERLY

Alcohol use by older Indians is not well reported in the research literature. Prevalence rates for alcohol use and misuse generally decrease as a population ages, but there have been few longitudinal studies among Indians to assess these trends (May 1996). Most older urban American Indians in Los Angeles do not drink alcohol (73 percent), but binge drinking is common among those elders less than 60 years old who drink (Barker 1996).

In 1993, AOD use occurred more commonly among Indian veterans discharged from the Veterans Medical Center in Seattle, Washington, than among the total population of veterans discharged in 1993 (Howard et al. 1996). Another study of alcohol use among 50 Indian men and 103 Indian women ages 45–76 years was conducted as a substudy of the Strong Heart Study. Fifty percent of men and 57 percent of women reported being former drinkers, while 46 percent of

men and 18 percent of women reported drinking within the last 30 days. Among the current drinkers, binge drinking was more common among men (25.9 percent) than among women (4.9 percent). In this study, 3.6 percent of men, compared with 25 percent of women, reported never drinking alcohol. Among both current and former drinkers, 71 percent of men and 28 percent of women reported heavy use of alcohol at some time in their lives (Lowe et al. 1997). No breakout by smaller age cohorts was provided in this report of older Indian drinking.

Longitudinal data from more than 3,000 Strong Heart Study participants ages 45–74 showed that the prevalence of alcohol use within the last year decreased significantly (6–8 percent) for both men and women in a 4-year period (1989–91 to 1993–95). Among participants who were drinkers at both the first and second examinations, the rate of binge drinking in the last month decreased significantly (9–24 percent) among participants from Oklahoma and Arizona. There was no significant change among South Dakota and North Dakota participants (Welty et al. unpublished manuscript). Many Navajo participants in an extensive study of drinking begun in 1969 were able to stop drinking in a followup evaluation 21 years later (Kunitz and Levy 1994).

### UNINTENTIONAL INJURIES AND OTHER RISKS ASSOCIATED WITH ALCOHOL USE

Motor vehicle crashes were the leading cause of death for Indians ages



15-44 from 1992-94 and the third leading cause for all age groups (IHS 1997b). Among Indian participants in the University of Minnesota Adolescent Health Survey (Blum et al. 1992) who were in grades 10-12 and who had driven a vehicle, 44.8 percent of males and 34.1 percent of females reported that they had driven a vehicle within the last 30 days while under the influence of drugs or alcohol. In the 1997 national adolescent risk behavior survey, conducted by the CDC, it was found that 21 percent of males and 12 percent of females in grades 9-12 reported they had driven after drinking in the last 30 days (Kann et al. 1998). In addition to drinking and driving themselves, 28 percent of Indian male high school students and 24 percent of Indian female high school students reported they often or sometimes rode with a drinking/drug-using driver (Blum et

al. 1992). For non-Indians in the CDC survey, 35.6 percent of male students and 28.2 percent of female students nationwide reported that, within the last 30 days, they had ridden with a driver who had been drinking alcohol (Kann et al. 1998).

In unpublished data from a rural New Mexico study, a lower proportion of Indian adolescents reported being passengers within the last week in automobiles operated by drinking drivers than did Hispanic or white adolescents (table 2). The New Mexico students also reported lower rates of riding with someone who has been drinking than students in either the Minnesota or the CDC study. About a third or more of non-Indian students reported riding within the last 30 days with someone who had been drinking, and 5-24 percent of non-Indian students drove after drinking within the last 30 days (table 3). Some

Table 2. Percentage of Rural New Mexico Adolescents Responding Yes to Riding With a Drinking Driver Within the Last Week, Grades 6-12.

Measure	Indian		Hispanic		White	
	Male	Female	Male	Female	Male	Female
Ever ride with a parent drinking alcohol?	25.9 (481)	26.3 (519)	40.7 (755)	38.1 (751)	31.3 (581)	29.3 (578)
Ever ride with a friend drinking alcohol?	23.4 (434)	15.1 (298)	33.0 (612)	22.7 (448)	26.1 (484)	24.8 (489)

Note: Total male  $n = 1,856$ ; total female  $n = 1,972$ .

Source: May, P.A. Assessment of risk and safety variables for adolescents in New Mexico: Comparative ethnic data. Unpublished report of the Native American Adolescent Injury Prevention Project, State of New Mexico, Health and Environment Department, 1980.

of the differences between the studies may be explained by the shorter recall period in the New Mexico survey (i.e., in the last week) versus the 30-day recall in the Minnesota and CDC studies. In addition, the New Mexico students were asked if they had ridden with a parent, while the other studies asked about riding with "a driver" (who could be parent or friend). Another factor in the lower rates among Indian students might be the paucity of privately owned vehicles in some rural areas, reducing opportunities to ride with an intoxicated driver.

Despite the lower rates of riding with intoxicated drivers reported in

the New Mexico study, one study found much higher rates. A survey on a Northern Plains Indian reservation indicated that during the previous 3 months, more than half (54 percent) of the respondents had ridden at least once with a driver who had been drinking (Oken et al. 1995). Because no public transportation (taxis or buses) is available on most reservations, often there are no practical alternatives to riding with a driver who has been drinking.

In a study in the State of Washington, American Indian drivers involved in motor vehicle crashes were more likely to be alcohol impaired and less

**Table 3.** Percentage of Male and Female Regular High School (RHS) and Alternative High School (AHS) Students Who Reported Riding With a Driver Who Had Been Drinking Alcohol and Students Who Drove After Drinking Within the Last 30 Days, Grades 9-12.

At-Risk Populations	Ever Ride With Driver Who Had Been Drinking?	Ever Drive After Drinking?
Euro-American male RHS	38.9	22.8
Euro-American male AHS	54.7	34.1
Euro-American female RHS	34.5	14.0
Euro-American female AHS	52.0	20.2
African American male RHS	37.3	14.3
African American male AHS	48.1	27.6
African American female RHS	29.8	4.8
African American female AHS	42.1	10.6
Hispanic American male RHS	44.6	24.2
Hispanic American male AHS	56.2	30.2
Hispanic American female RHS	40.6	11.0
Hispanic American female AHS	50.2	15.2
Total All-Races male RHS	38.3	21.0
Total All-Races male AHS	54.0	31.6
Total All-Races female RHS	34.5	12.0
Total All-Races female AHS	49.3	17.1

Note: The number of students participating in the regular high school survey was 16,262 (Kann et al. 1998; see table 2 on p. 35). The number of students participating in the alternative high school survey was 8,918 (Grunbaum et al. 1999; see table 2 on p. 6).

likely to be restrained by seat belts than non-Indians involved in motor vehicle crashes (Grossman et al. 1997). In the 1997 CDC study, failure to use seat belts was reported by non-Indian students about 19 percent of the time, with males less likely to use seat belts (23.2 percent) than females (14.5 percent) (Kann et al. 1998).

Nationally, from 1985 through 1996, a total of 3,830 children under 15 years were killed as passengers in a motor vehicle crash involving a driver with a blood alcohol concentration (BAC)  $\geq 0.10$  g/dL. Drivers with a BAC of  $\geq 0.10$  g/dL are less likely than drivers with lower BACs to wear seat belts, and younger children (ages 10–14) riding with a driver who has been drinking are less likely to be restrained (CDC 1997). A study of maternal mortality and motor vehicle crashes showed a disproportionately high number of Indian maternal deaths from these crashes, many of which were associated with alcohol use and lack of seat belt use (Schiff et al. 1997). Efforts on reservations to increase seat belt and child safety restraint use have not been evaluated.

A few studies yield clues about levels of intoxication at the time of an injury or fatal crash (see chapter 15 for additional research on drinking and driving). More than 70 percent of American Indian trauma patients tested in Harborview Medical Center in Seattle had BACs exceeding 0.1 percent (Sugarman and Grossman 1996). From 37 to 66 percent excess mortality among American Indians was associated with alcohol-related motor vehicle crashes in Arizona from

1979 through 1988, and 27–55 percent excess pedestrian deaths were associated with alcohol (Rothfus and Dellapena 1997).

In a survey of risk factors for residential fire and burn injuries in an American Indian community, 38 percent of participants drank alcohol and smoked at the same time (Mobley et al. 1994).

The studies described in this section document the association of unintentional injuries with alcohol abuse and suggest that coordinated injury prevention and AOD abuse treatment and prevention programs, especially designated driver programs, are needed at the individual and community level to further reduce alcohol-associated morbidity and mortality in Indian communities.

## PREVENTIVE AND CLINICAL PROGRAMS

There have been a number of community-based efforts to reduce problems related to AOD misuse. Examples include (1) the formation of a Dads Against Drunk Driving (DADD) chapter by Oglala Sioux tribal members in Pine Ridge, South Dakota (Chase 1998); (2) a “declaration of war on substance abuse” by the Cheyenne River Sioux Tribe of Eagle Butte, South Dakota—the Planned Approach to Community Health (PATCH) program (August 1988); (3) special recreational programs for youth and families like the Puyallup Nation’s PRIDE program (Dorpat 1994); and (4) the Flathead Reservation’s Blue Bay Healing Center (Fleming 1994). The ultimate

(and self-initiated) community intervention was the Alkali Lake Band's comprehensive community sobriety efforts in British Columbia (Rhoades et al. 1988; Willie 1989; Ben 1991). More examples of prevention and treatment programs can be found in section II of this monograph.

Almost every Indian community has community-based initiatives to combat AOD misuse, and, cumulatively, these may contribute to the reduction of morbidity and mortality rates related to AOD misuse. Although no empirically based studies of treatment outcomes have been conducted with Indian patients, success rates up to 65 percent have been documented in individuals who are employed and have a stable family (high functioning) (Cruz 1999). Higher treatment dropout rates have been reported for Indian patients than most other groups. More research is needed to determine what works and why, because there is very little published research that shows a relationship between community, tribal, or Federal efforts and statistical reductions in alcohol-related problems (Burns 1995). Such programs need to be carefully evaluated to determine the most effective approaches to addressing these serious problems. Then increased support for effective interventions will be needed to reduce the alcohol-related morbidity and mortality for Indians to national levels.

Clinicians who care for Indian patients should systematically screen for AOD use and misuse so that appropriate education, counseling, and treatment can be provided to at-

risk patients. This is especially important in patients receiving prenatal care, because of the adverse effects of fetal alcohol exposure. A self-administered questionnaire/prenatal health assessment has been validated in an Indian population receiving prenatal care and is available at the Department of Health and Human Services, Program Support Center Forms Download Web site: <http://forms.psc.gov/forms/IHS/ihs.html> (IHS-866).

Use of this screening questionnaire in an urban Indian population of prenatal patients in the Northern Plains showed that 80 percent of the patients had consumed alcohol just before pregnancy, and 44 percent had consumed alcohol during pregnancy (Gale et al. 1998; Bad Heart Bull et al. 1999). All primary care facilities serving Indian women are encouraged to use this instrument or some other equally validated and standardized instrument to screen pregnant women for AOD use (Li et al. 1999). Identification of women who are consuming alcohol during pregnancy is a vital component of efforts to prevent alcohol-related birth defects and other alcohol-related developmental disorders. Women who consume alcohol in pregnancy are more likely to smoke cigarettes, to use illicit drugs, and to be in abusive relationships than women who do not consume alcohol during pregnancy (Kvigne et al. 1998). Prenatal patients who drink alcohol need intensive counseling regarding their alcohol abuse and other risky behaviors that may adversely affect their pregnancies.

Screening for alcohol use among older Indians should also be routinely conducted during clinical encounters. Although a majority of older Indians do not use alcohol, those who do may misuse it and may be at greater risk for illness and injury. In 1996 the IHS published a report on the health status of older Indian individuals emphasizing the need for health care providers to screen for alcohol use in elderly Indians, especially since they are prone to other chronic illnesses that may be adversely affected by alcohol abuse (Rhoades 1997).

To develop more effective community interventions, there is a need for further evaluation of comprehensive school health education and community-based programs for Indian students in grades K-12. Special attention must be paid to evaluating and strengthening the effectiveness of prevention programs for AOD abuse in the lower grades. Many researchers have commented on the early age at which Indian youth begin using alcohol (Mail 1967; Moss and Janzen 1980; Olsen and Baffi 1982; Mail 1995; Beauvais 1996). Tribal leaders continue to request support for the development of structured and planned chemical-free youth activities, similar to non-Indian programs such as the Boy Scouts, Girl Scouts, and 4-H programs (Vanderwagen et al. 1988). Teen centers like the one at Zuni described by Stivers (1994) appear to be a healthy alternative to AOD use.

Although some communities have made significant progress in youth prevention programs, there continues to be a paucity of community- and

school-based interventions. Those that are available are "snapshot" samples, often subject to short-term evaluations, or demonstrations whose funding runs out after 4-5 years. Parker-Langley summarizes many of these programs in chapter 6. Data on adolescent AOD use should be collected and analyzed annually, but caution must be exercised in attributing declines in AOD use rates exclusively to these programs (Cheadle et al. 1995).

From the preceding discussion, it is clear that more emphasis needs to be placed on new approaches to alcohol education, accompanied by in-school and out-of-school activities and other preventive interventions to protect Indian youth. Particular emphasis needs to be directed at understanding youth attitudes and beliefs about AOD use, recognizing that knowledge alone is not a deterrent to misuse. Also, differential approaches to boys' and girls' expectations for and uses of alcohol need to be considered when designing prevention programs.

Finally, although epidemiology can document the extent and effects of illness within a community, it usually does not address the cultural milieu in which such illness occurs. Clinicians and researchers working in Indian communities need to be trained in cultural sensitivity, customs, and values and need to be helped in developing bicultural competencies that will increase their ability to practice and conduct research in these unique and challenging environments. While behavioral and biological causes can be identified to explain excess mortality and morbidity, the many choices

for prevention and amelioration of problems should be grounded in the community's history, customs, and culture. In this fashion, maintaining health and healing becomes a partnership among patient, provider, researcher, and community.

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## Chapter 4

# Genetic Susceptibility and Alcoholism in American Indians

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*KEY WORDS: Native American; AOD (alcohol or other drug) use susceptibility; AOD dependence potential; genetic linkage; genetic trait; genetic polymorphism; AODR (AOD related) genetic markers; ethanol metabolism disorder; alcohol flush reaction; alcohol dehydrogenases; aldehyde dehydrogenases*

The indigenous peoples of North America have been linked with adverse reactions to the consumption of beverage alcohol practically since the time of European contact. Alcohol was introduced to these peoples by the early settlers: American Indians had no knowledge of distilled beverages, and only a few indigenous peoples were reported to have manufactured fermented beverages (Abbott 1996). From the earliest colonial times, Europeans reported violent behaviors (e.g., fighting and homicides) associated with intoxication of native peoples,

while overlooking the same alcohol-related behaviors in their own people. Eventually prejudices and stereotypes developed and became so generalized that it was assumed that any Indian given alcohol in any circumstance would become wild and dangerous. No doubt these prejudices were at least partially the result of the colonists' ignorance about Indian culture and a fear of losing their European way of life.

As a result of these prejudices and stereotypes, laws prohibiting the sale and possession of alcohol were among

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some of the earliest colonial legislation, beginning with the Connecticut colony in 1645 (*Laws of the Colonial and State Governments Relating to Indians and Indian Affairs* 1832; Levine 1983). Later, complex laws against trade and transportation of liquor were initiated (Thunder 1880; Prucha 1962). A measure of the impact of years of restrictive legislation, and the underlying assumptions that Indians cannot manage alcohol, can be found today in the tribal laws and statutes that maintain prohibition on reservations (May 1976).

The reality is that many Indians did and do drink heavily and experience severe social and medical problems associated with this drinking. This phenomenon of heavy drinking has also contributed to the drunken Indian stereotype. However, the magnitude and expression of alcohol misuse by Indians is not unlike that seen in many other cultures contacted by Europeans in the post-Columbian period. Nonetheless, many Europeans became convinced that Indians had an underlying physical incompatibility that resulted in their seemingly bizarre behavior during intoxication. This belief in an underlying physical incompatibility persists despite the fact that it has not been supported by scientific research on Indians and their reactions to alcohol (Leland 1976; Schaefer 1981; Garcia-Andrade et al. 1996, 1997; French 2000). This chapter reviews the major lines of investigation into metabolic differences and genetic susceptibility among Indians. It documents the trend to understand alcoholism as the

expression of a complex relationship between the actions of genes and environments. Finally, it points to some avenues for future research.

### THE NATURE OF ALCOHOL USE AND ALCOHOLISM IN INDIANS AND NON-INDIANS

Researchers have long sought to explain why Indians drink in the manner and to the excesses observed and reported (Chittenden 1902; Clairmont 1963; Dailey 1968; MacAndrew and Edgerton 1969; Winkler 1969; White 1970; Robin et al. 1998). A review of various anthropological, sociological, psychological, and medical explanations show that more than 60 different theories have been put forward at one time or another (Mail 1984). By contrast to popular perceptions of alcoholism in Indians, the preponderance of these theories are sociocultural in nature, ranging from learned behavior (MacAndrew and Edgerton 1969) to deliberate protest acts for loss of land, freedom, and tradition (Lurie 1971).

It is possible that the uninhibited behavior exhibited by Indians, as reported by the Europeans who introduced the alcohol, represents the first exposure of a culture to the normal side effects of alcohol intoxication modified by the individual's cultural norms for behavior (MacAndrew and Edgerton 1969). Although this explanation is speculative, individual accounts of alcohol misuse in Indians have described uncontrolled drinking, long periods of drunkenness after

what seemed to be relatively little alcohol, and excitability (Dailey 1968); such features are consistent with the effects on individuals who are unfamiliar with alcohol and who have not developed social control or physiological tolerance to ethanol (as perhaps the Europeans had).

Genetic studies on both Indians and non-Indians are now concerned with finding the basis for differences in health and disease among individuals within the same population. Alcoholism research conducted primarily in non-Indians has revealed that both heredity and environment contribute to vulnerability to the disorder. A series of studies beginning in the 1970s firmly documented that alcoholism does run in families of diverse European and Euro-American heritage (Goodwin et al. 1974; Cotton 1979; Cloninger et al. 1985; Cadoret et al. 1994). Thus, in addition to social influences on behaviors and disorders associated with alcohol, there are inherited susceptibilities. Investigation of the genetic and social-environmental underpinnings of alcoholism and alcohol-related behaviors among Indian peoples has received less attention. This is due in part to the paucity of individuals with which to conduct twin or adoption studies, which are among the standard mechanisms to explore heritability. In addition, detailed studies on alcoholism and other medical conditions are most easily accomplished in urban medical centers, which are inaccessible to many American Indians.

Nonetheless, one study presents preliminary analyses on the familial pattern of alcohol dependence in a Southwest-

ern Indian tribe. In a large sample ( $N = 582$ ), Long and colleagues (1998) found that the odds for alcoholism in a subject are significantly increased by having an alcoholic first-degree relative. While the male-to-male pattern of risk is not statistically significant, the odds for alcoholism in males are increased about 1.6-fold by having an alcoholic male first-degree relative. In females, there is a statistically significant 2.2-fold increase in odds for alcoholism afforded by having an affected first-degree female relative. Interestingly, having alcoholic female second- and even third-degree relatives also significantly increases the odds for alcoholism in females in this sample. These findings suggest that both genes and environments contribute to alcoholism within this population. They present the challenge to determine whether the mechanisms by which genes and environments contribute to risk for alcoholism in this population are similar to those operating in non-Indians.

### CHALLENGES IN THE COLLECTION OF APPROPRIATE CLINICAL DATA

Human genetic analysis always benefits from a rigorous diagnostic procedure that eliminates uncertainty and refines trait definitions. Fortunately, the collection of valid and comparable data in the cross-cultural setting has been facilitated by the development of robust diagnostic criteria such as those defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM) and International Classification

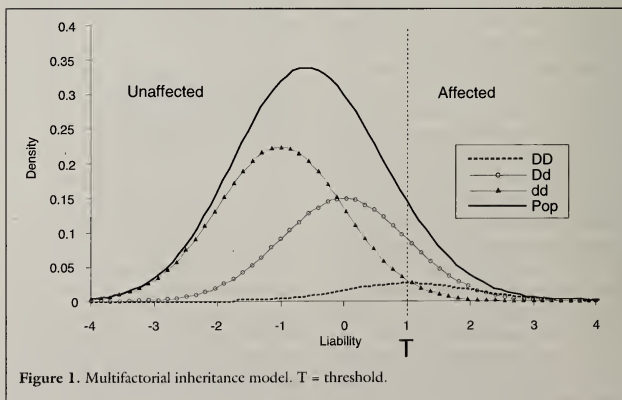
of Diseases (ICD). Each diagnostic system has evolved over time; the most current versions are DSM-IV (American Psychiatric Association 1994) and ICD-10 (World Health Organization 1992). A consensus is now emerging among Western scientists that alcohol disorders specifically defined by these systems occur widely among most ethnic and cultural groups that have access to alcoholic beverages.

The diagnostic procedure has also been improved by the development of standardized interview procedures that have been validated in a variety of research settings. These procedures include the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) (Bucholz et al. 1994), the Schedule for Affective Disorders and Schizophrenia—Lifetime (SADS-L) (Shore et al. 1987), and the Alcohol Use Disorders Identification Test (AUDIT) (Babor et al. 1992; Saunders et al. 1993). However,

responses to screening tests and clinical interviews must be interpreted in the light of local cultural norms and beliefs. It is now a regular practice among researchers to consult with community groups and tribal leaders to identify culturally sensitive issues and to determine how to conduct research and how to report results and findings back to the tribes. Because diagnostic interviews may be compromised in the cross-cultural setting, they are often augmented and verified using multiple sources of corroborative information, including medical records, family histories, and screening tests (Brown et al. 1993; Rice et al. 1995).

### ALCOHOLISM AS A MULTIFACTORIAL GENETIC DISORDER

Alcoholism is now understood as a multifactorial disorder with a partially genetic predisposition. Figure 1 is a



formal representation of the multifactorial inheritance model. It postulates that an unobservable variable called liability underlies the outward expression of alcoholism. Liability is a composite of many genetic and environmental factors that contribute to individual risk. The precise liability score for an individual is unknown, but he or she is affected if the score is above a certain threshold. Conversely, if the liability score is below the threshold, the individual is unaffected. In this hypothetical example, the genotype of an individual at the D-locus contributes to liability. On average, liability is highest among DD individuals, intermediate among Dd individuals, and lowest among dd individuals. Nonetheless, some carriers of all three genotypes are unaffected while others are affected. The variability among individuals with the same genotype reflects environmental factors and the effects of genes at loci other than the D-locus.

A fundamental principle of genetics (Falconer and MacKay 1996) is that the inheritance pattern of a multifactorial trait is a property of both the trait (even the way that it is measured or diagnosed) and the population (including the relevant gene frequencies, the environmental circumstances, age structure, and life expectancy). Thus, the proportion of a population that lies above the threshold will be higher if the population is relatively saturated for environmental contributions to the disease. It is entirely possible for the differences in prevalence of alcoholism between populations to be related to environmental differences and, at the same time, the differences among indi-

viduals within the same population to be affected by both genes and environments. Of course, the precise relationship between population prevalence and the distribution of genetic and environmental risk factors cannot be measured until specific genes and environments causing alcoholism are identified.

Although the availability of alcohol and its abuse have produced high mortality and reduced life expectancy in Indian people (Westermeyer 1974), it is important to note that rates of alcohol-related mortality vary among different Indian communities. This suggests that Indians do not all misuse alcohol or experience alcohol-related disorders to the same degree. For calendar years 1992-94, tribal peoples in the States that make up the Indian Health Service Aberdeen Area (i.e., North and South Dakota, Nebraska, and Iowa) had an age-adjusted alcoholism mortality rate of 112.7 per 100,000, which was about 17 times the 1993 U.S. All-Races rate of 6.7 per 100,000. But Indian peoples in the Oklahoma Area (Kansas, Oklahoma, and eastern Texas) had an age-adjusted alcoholism mortality rate of 15.9 per 100,000, about one-seventh the mortality observed in the Aberdeen Area, and only about twice that of the All-Races baseline (Indian Health Service 1997). Thus, the differences in rates of alcohol-related mortality among Indian communities exceed the differences between Indians and non-Indians. By contrast, recent studies on DNA polymorphisms in American Indians (e.g., Urbanek et al. 1996; Romero 1998) have shown that the genetic differences between tribes are very minor.

## METABOLIC AND GENETIC STUDIES RELATED TO ALCOHOL IN AMERICAN INDIANS

Studies on the genetic susceptibility to alcoholism in American Indians have taken several, sometimes overlapping, paths. It was initially assumed that alcohol metabolism differed between Indians and non-Indians (Fenna et al. 1971; Ewing et al. 1974; Bennion and Li 1976; Farris and Jones 1978*a*, 1978*b*; Feldstein 1978; Rex et al. 1985; Li and Bosron 1986). Two early studies reported differences between Indians and Caucasians for rates of alcohol metabolism following ingestion (Fenna et al. 1971; Farris and Jones 1978*b*), but followup studies failed to confirm these differences (Bennion and Li 1976; Li and Bosron 1986; Wall et al. 1996). Other physiological studies have explored responses such as memory impairment or memory loss (e.g., blackouts), but in tests of alcohol's influence on memory in a small Oklahoma sample, no differences were found between Indian women and non-Indian women (Farris and Jones 1978*a*). Interestingly, an early review of ethnographic, clinical, and historical literature (Leland 1976) identified several flaws in the designs of these studies. These flaws included the use of sample sizes that are too small to yield conclusive findings, the failure to control for differences in tribal background, imprecise definition of traits and symptoms, and the use of samples from clinical populations to make inferences about general populations.

More recent literature reveals that some of these flaws have persisted.

The majority of other physiological studies on American Indians have looked for a flushing response to alcohol consumption that is similar to that observed in some people of Asian heritage. The Asian flushing response frequently occurs in carriers of a defective allele (*ALDH2\*2*) of the acetaldehyde dehydrogenase (*ALDH*) gene. Following drinking, *ALDH2\*2* fails to remove acetaldehyde, a harmful byproduct of alcohol metabolism. American Indians were expected to carry this allele because people from the Asian continent were the first humans to settle the Americas (see, e.g., Williams et al. 1985; Long and Lorenz 2000).

Only one study has claimed to observe the typical Asian flushing reaction in North American Indians (Wolff 1973). All other studies have failed to confirm its presence (Zeiner et al. 1976, 1977; Schaefer 1979; Rex et al. 1985; Bosron et al. 1988; O'Dowd et al. 1990; Chen et al. 1992). Extensive surveys of Native North Americans have failed to find either the *ALDH2\*2* allele or another *ALDH* polymorphism with similar effect (Novoradovsky et al. 1995*a*, 1995*b*). Moreover, while the Asians who carry this allele have an acute response to alcohol, alcoholism is less common among carriers because the flushing effect is unpleasant overall. Another noteworthy variation in alcohol metabolism carried by people of Asian descent is the *ADH2\*2* allele at the alcohol dehydrogenase (*ADH*) locus. This variant enhances the cat-



alytic activity of ADH isozymes and serves to increase blood acetaldehyde levels following drinking. Although the effect of *ADH2\*2* is less pronounced than that of *ALDH2\*2*, carriers of *ADH2\*2* are also less likely to become alcoholic. As with *ALDH2\*2*, surveys have failed to discover *ADH2\*2* in Native North Americans (Rex et al. 1985).

Since the early 1990s, researchers have pursued a new line of investigation. This involves attempts to associate alcoholism with polymorphic alleles in candidate genes with known functions related to addiction or neurobiology (Goldman et al. 1993, 1997). More recently, genetic linkage analysis has been applied to find chromosomal locations that are likely to harbor undiscovered genes with variants that contribute to differences in liability to alcoholism. Linkage analysis looks at patterns of co-transmission between disease phenotypes and genetic markers with known positions on chromosome maps. It can be applied to the chromosomal region of a specific candidate gene (Lappalainen et al. 1998) or in a comprehensive fashion using a dense map of markers distributed across all of the chromosomes (Long et al. 1998). It is important to note that candidate gene and genetic linkage analysis are complementary approaches that have been applied to a variety of diseases and to a broad spectrum of populations. The documentation of genetic differences between Indians and non-Indians is not an objective of either the candidate gene or genetic linkage approaches.

The *TaqIA* polymorphism closely linked to the D<sub>2</sub> dopamine receptor

gene (*DRD2*) has received considerable attention (Goldman et al. 1993, 1997). This polymorphism appeared to be a marker of severe alcoholism in a heterogeneous sample of non-Indian people (Blum et al. 1993), but the supposition of linkage or direct action has been challenged (Bolos et al. 1990; Gelernter et al. 1993). Nevertheless, it was of interest to study this polymorphism in American Indians because both alleles reach appreciable frequencies and severe alcoholism is relatively common. Samples from Caucasians, African Americans, and two Indian tribes confirmed that the A1 allele frequency is elevated in Indians relative to Caucasians. However, the high prevalence of alcoholism in both tribes could not be explained by this polymorphism. Indian *TaqIA* carriers were not significantly more likely to be alcoholic than Indian *TaqIA* noncarriers (Goldman et al. 1993).

A more recent study of the *TaqIA* polymorphism in a Southwestern Indian tribe also investigated two other polymorphisms within the transcribed sequence of *DRD2*. The first was a functional amino acid substitution (Ser311Cys), and the second was a non-coding short tandem repeat polymorphism (Goldman et al. 1997). Neither genetic linkage nor association between any of these three polymorphisms and alcohol dependence was detected. Moreover, the three polymorphisms failed to demonstrate a statistically significant association or linkage with drug abuse disorders or schizophrenia. Although a recent letter claims that the *TaqIA* polymor-

phism is associated in this sample with drug abuse disorder (Vanyukov 1999), the evidence is very weak and will require further independent confirmation (Goldman et al. 1999).

Only a few neurobiological candidate genes besides *DRD2* have been investigated in American Indians. These studies were conducted on the same Southwestern Indian sample that was investigated by Goldman and colleagues (1997). One study (Bergen et al. 1997) detected several variants in the  $\mu$  opioid receptor gene, an obvious candidate for substance-related disorders. No association or linkage was detected between these  $\mu$  opioid gene polymorphisms and a variety of alcohol and other drug abuse phenotypes.

In another study of the same Southwestern Indian sample (Lappalainen et al. 1998), linkage between the 5-HT1B serotonin receptor gene and a phenotype called antisocial alcoholism was investigated. This phenotype required the presence of either DSM-III-R alcohol dependence or DSM-III-R alcohol abuse comorbid with either DSM-III-R antisocial personality disorder or DSM-III-R intermittent explosive disorder (American Psychiatric Association 1987). Significant evidence for linkage between antisocial alcoholism and the HTR1B G861C polymorphism was revealed using a sib-pair design in a study with more than 400 participants. Antisocial alcoholism was also significantly linked to *D6S284*, a marker locus in proximity to the HTR1B on chromosome 6.

Even more interesting is that these findings confirmed a result originally

observed by Lappalainen and colleagues in a European sample from Finland. In the Finns, antisocial alcoholism showed significant evidence for linkage to HTR1B G861C and weak evidence for linkage to *D6S284*. A detailed analysis of patterns of association in the American Indian and Finn samples indicates that the HTR1B G861C polymorphism does not directly contribute vulnerability to antisocial alcoholism in these populations. Rather, it appears to be a marker for a linked functional gene polymorphism. Efforts are under way to further localize and identify the predisposing gene. An important implication of these findings is that the same genetic polymorphism likely contributes to alcoholism in both populations. Thus, no evidence for an Indian-specific genetic factor is revealed by these results.

A comprehensive autosome-wide genome scan was performed to detect linkage to alcohol dependence in the Southwestern American Indian tribe (Long et al. 1998). Genotypes at 517 microsatellite marker loci and clinical evaluations were available for 152 subjects who had participated in a study on diabetes. Two-point and multipoint linkage analysis for dichotomous quantitative traits were performed by the sib-pair mapping procedures of Haseman and Elston (1972) and Fulker and colleagues (1995). Since the subjects belonged to extended pedigrees, there were 172 sib-pairs among the 152 subjects. Highly suggestive evidence for linkage emerged for two genomic regions; both regions harbor neurogenetic

candidate genes. The best evidence is seen with *DIIS1984* on chromosome 11p, in proximity to the *DRD4* dopamine receptor and tyrosine hydroxylase (*TH*) genes. Good evidence is seen with *D4S3242* on chromosome 4p, nearby the  $\beta 1$  GABA receptor gene. Interestingly, three loci in the *ADH* gene cluster on chromosome 4q showed modest evidence for linkage to alcohol dependence. The chromosome 4 findings are particularly interesting because of the well-known variants at the *ADH2* gene that render individuals less likely to become alcoholic. However, if *ADH* is responsible, it will require that there are unknown functional alleles because, as mentioned earlier, there is no evidence for presence of the *ADH2\*2* allele in North American Indians.

## FUTURE RESEARCH DIRECTIONS

Some researchers (notably Cloninger et al. 1981, 1985) have proposed the existence of subtypes of alcoholism based on the constellation of symptoms, underlying personality factors, and disease course. The alcoholic who engages in antisocial activity as well as alcohol abuse at or before puberty is classified as a type 2. This form of the disease is relatively rare, occurs almost exclusively in men, and is highly familial. By contrast, for many alcoholics, the disease arises later in life and develops over time, even as the individual maintains a job and family (type 1). This form of the disorder is more common, less heritable, and frequent in both men and women.

Research on type 1 and type 2 alcoholism has been conducted largely within Europeans. It is possible that the distinction might apply among Indians, but there has never been a direct test of this hypothesis. Brown and colleagues (1993) considered the possibility of these distinctions in their study of a Plains Indian tribe, but they did not measure or evaluate the personality dimensions (harm avoidance, novelty seeking, reward dependence) that are essential to the definitions of type 1 and 2 alcoholism.

It will be useful to identify patterns of alcohol-related symptoms and subtypes that are more common in American Indians. Genetics studies will benefit from understanding diverse far-ranging phenomena such as the effect of traditional and cosmopolitan cultural awareness, the mechanisms of learning, and how individuals perceive their chances for success in life. Interestingly, many Indian men who begin heavy drinking as youths are able to control their drinking or abstain in midlife (Leung et al. 1993; May 1996). These men and the many non-problem social drinkers may reveal important clues about the contributions to liability of wellness and resistance to physical addiction.

There has not yet been extensive investigation of the relationship between alcoholism and non-Indian genetic admixture. Admixture erases Indian versus European differences; it does not create them. The value of adjusting statistical analyses for admixture, and the proper way to achieve this, will depend on the phenotype being studied, the null hypothesis

being tested, and the underlying assumptions of the analysis. For example, if it is assumed that all Indians share a biological vulnerability to alcohol problems that is not shared by non-Indians, then admixture is a critical confounding variable. The association between *Gm*<sup>3;5,13,14</sup> and type 2 diabetes mellitus in a Sonoran Desert Indian community in southern Arizona is a clear example of genetic admixture providing a false-positive association between a genetic variant and a disease phenotype (Knowler et al. 1988). A followup study (Williams et al. 2000) demonstrated a global association between diabetes, admixture in individuals, and random genetic markers. Fortunately, the more recent studies on alcohol-related variables have controlled where necessary for non-Indian admixture by directly ascertaining subjects' Indian heritage (Zeiner et al. 1985; Garcia-Andrade et al. 1996; Walker et al. 1996).

The number of tribes participating in genetic research is expanding. This contributes importantly to our knowledge because each population presents a unique gene pool in a unique socio-cultural environment. For example, in the Southwestern Indian sample discussed earlier in this chapter, there was a statistically significant 2.2-fold increase of the odds for alcohol dependence if a woman had a female first-degree relative with alcohol dependence (Long et al. 1998). By contrast, the increase in odds for a man with a first-degree male relative with alcohol dependence was only 1.6-fold, and this increase was not statistically significant (Long et al. 1998).

An implication of this finding is that liability in men is more influenced by the environment than is liability in women. In all non-Indian populations, heritability of alcoholism is as high, or higher, in males as compared with females. This suggests that in non-Indians, liability in males is no more influenced by environment than is liability in females. The simplest conclusion from these findings is that the results of one population cannot be extrapolated to other populations without careful validation.

## FINAL REMARKS

We cannot conclude this review without noting that the character and potential of genetics research are rapidly changing. The human DNA sequence is now known almost in entirety (Venter et al. 2001). This supplies geneticists with an advanced resource for finding previously unknown genes, making preliminary assessments of their functional roles (i.e., nominating new candidates), and developing assays and screening procedures. It also presents a challenge to prevent misuse of this knowledge and to maintain high ethical standards in the face of change. Many of the ethical challenges are shared by all biomedical sciences and are not unique to genetics (Fraser 2001), but it is also true that ethical issues are often more acute for Indian people than for the general population (Rhoades et al. 2000). It is now recognized that the unit of research is often an Indian community and not merely individual subjects. Genetic information,

whether it is at the level of a phenotypic assessment or DNA typings, may reflect on community members who did not directly give consent to or participate in the research. While issues related to the minimization of harms and maximization of benefits to groups are still being debated and perfected, they are of utmost importance to researchers and subjects alike.

The strongest conclusion that one can draw from current research is that there is a genetic susceptibility or vulnerability in certain individuals and families, regardless of ethnicity. Decades of research have failed to establish a purely Indian component to vulnerability to alcoholism, and this is no longer an objective. Current research foci are directed to differences between individuals in the same population and to discovering specific genetic and environmental factors that contribute to liability. Given our current knowledge, the best approach for prevention and treatment continues to be effective education, screening, early intervention, and appropriate referral to treatment for alcohol misuse and addiction. However, these measures have been largely unsuccessful (see chapters 3, 5, 6, and 7 in this monograph), and new directions need to be pursued. Revitalized Native culture and spiritual activities may offer promising avenues for prevention and treatment, and, fortunately, the multifactorial inheritance model recognizes both genetic and environmental components to liability. There is no reason why genetic research cannot be conducted in concert with research on environmental risk factors.

Genetic studies in American Indians have provided provocative leads to further research, but the exact loci have yet to be identified. The situation is much the same in Europeans and their descendants. However, the potential for finding genes related to alcoholism is proved by findings at the *ADH* and *ALDH* loci in Asians.

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## Chapter 5

# Alcohol Control Policies and American Indian Communities

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*KEY WORDS: Native American; ABC monopoly system; economic theory of AODU (alcohol or other drug [AOD] use); AOD availability; AOD price; prohibition (AOD public policy); problematic AOD use; nonproblematic AOD use*

An economist's first pathway to approach policy about a commodity such as alcohol might be to view the landscape in terms of supply and demand. The demand for alcohol refers to the amount that people want to drink (per unit of time) under any prevailing set of price and availability conditions. The supply of alcohol refers to the amount that becomes available for people to consume under a prevailing price and regulatory regime. Individual choices—people choosing what to do given the incentives around them—ultimately determine the demand and supply conditions. Markets produce incentives in the form of prices—whether sales are legal or

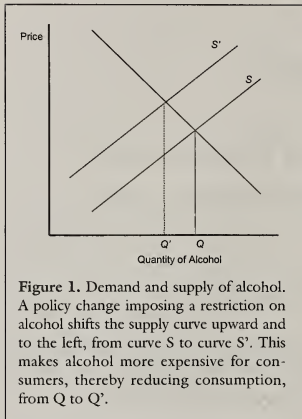
not—to bring demand and supply into balance.

Alcohol control policies such as taxation, restricting access by youth, or outright prohibition change the supply conditions for alcohol. That is, they aim to reduce the amount that becomes available for people to consume at whatever price level. Alternatively, they may be seen to raise the cost to consumers for obtaining any given quantity (figure 1). The figure shows that a control policy such as a tax on alcohol would raise the cost to consumers and therefore reduce consumption.

Although this simple supply-demand model has a certain theoretic-

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**Figure 1.** Demand and supply of alcohol. A policy change imposing a restriction on alcohol shifts the supply curve upward and to the left, from curve  $S$  to curve  $S'$ . This makes alcohol more expensive for consumers, thereby reducing consumption, from  $Q$  to  $Q'$ .

cal appeal, I would be the first to caution that it does not adequately address the complexity of alcohol policy concerns for any group of people. However, it does illustrate two important propositions that serve as starting points for this chapter. First, policy can make alcohol illegal, but true prohibition is an elusive goal. Anyone with the initiative, time, and money can obtain (or brew) alcohol; policy can only add to the cost—in terms of time and money—of obtaining it. (Note that the risks of fines and imprisonment represent contingent time and money losses.) Second, figure 1 shows that the degree to which control of supply affects consumption depends on the demand relationship. That is, the effectiveness of alcohol policy depends ultimately on consumer behavior.

There is a long-standing debate over the degree to which control of alcohol

supply is effective or makes sense as a policy direction for prevention of alcohol and drug abuse; see Peelle (1987) and Room (1987) for summaries of the arguments for and against control of supply as a policy for prevention of alcohol abuse. The arguments on both sides of the control-of-supply debate are probably familiar to most alcohol researchers. However, it may be useful to review empirical studies relevant to prevention policy for American Indian populations. The remainder of the chapter begins with a brief review of studies measuring effects of price and availability on alcohol consumption among North American and European populations, followed by a review of studies of alcohol control among American Indians and other cultural groups. Much of this research generally challenges the idea that alcohol control is likely to be an effective prevention strategy for American Indians.

I propose a more complete model of drinking behavior that may reconcile the conflicting findings of the prevention literature and help frame questions of alcohol policy. This model generates a set of testable hypotheses about the effectiveness of alcohol control among American Indians. In the concluding section of this chapter, I discuss the implications for research on alcohol policy for American Indians.

### EMPIRICAL RESEARCH ON EFFECTS OF PRICE AND AVAILABILITY

A large and growing body of research, undertaken primarily by economists,

has investigated the relationship between individual incentives and alcohol consumption or behavior. Much of this research assumes the basic link between the consumer cost of alcohol and alcohol consumption modeled in figure 1. Health outcomes follow from an assumed simple relationship between aggregate consumption and alcohol abuse.<sup>1</sup>

Janes and Gruenewald (1991) divided alcohol control mechanisms into two categories: economic availability, or market regulation with taxes, price controls, and advertising restrictions, and physical availability, or restrictions on legal access. In this section, I first review studies that measure the response of drinking behavior to potential market regulation and then review studies that measure effects of policies that restrict physical access to alcohol.

### EFFECTS OF MARKET REGULATION

Much of the empirical research that estimates effects of alcohol price on consumption compares alcohol price variations with either cross-section or time-series data on aggregate consumption rates in North America, Australia, and northern European countries. Many of these studies estimate separate relationships for beer, wine, and spirits. The results differ widely depending on the data source and specification (Osterberg 1993). Economists generally use the price elasticity of demand to measure the sensitivity of consumption to price. The elasticity of demand is defined as the percentage change in the amount consumers want to buy divided

by the percentage change in the price. A negative elasticity indicates that consumers want to buy less as price rises. The larger the negative number, the more sensitive is consumption to the price. Most studies find aggregate price elasticities of  $-0.2$  to  $-0.4$  for beer, with somewhat larger negative numbers for wine and spirits (Ornstein and Levy 1983; Ornstein and Hanssens 1985; Selvanathan 1991). Researchers generally find wine consumption the most sensitive to prices.

More recent studies have been able to obtain a substantial improvement in statistical precision, as well as allow better observation of substitution patterns among different alcoholic beverages, by using individual consumption data. Studies of individual consumption also allow researchers to account explicitly for those who do not drink any alcohol. Gao and colleagues (1995) estimated price elasticities from survey data ranging from  $-0.2$  for beer and  $-0.3$  for spirits to  $-0.7$  for wine. Yen (1995) found that an alcohol price index had no significant effect on whether or not U.S. Department of Agriculture 1987-88 National Food Consumption Survey respondents consumed any alcohol during the survey week. However, the price elasticity of total alcohol consumption for those who did drink was  $-0.34$ .

<sup>1</sup> As Saffer (1995) noted, "The public health issue is alcohol abuse rather than alcohol consumption. However, many researchers assume that in an alcohol consumption distribution function there is a proportionate relationship between the mean and the upper tail. If this assumption is true, then per capita consumption is a good proxy for alcohol abuse." (p. 83)

The results of this study suggest that an alcohol tax that increases the consumer price by 10 percent would tend to reduce alcohol consumption by 3.4 percent.

Yen's results suggest that the effect of price on consumption is likely to be greater among habitual or heavy drinkers. This presumption is supported by Cook and Tauchen (1982), who found that a \$1 increase in liquor taxes—which approximates a \$1 increase in the price of alcohol—reduced State age-adjusted cirrhosis mortality rates by an average of 5.4 percent.<sup>2</sup> Manning and colleagues (1995), however, analyzed 1983 National Health Interview Survey data and found that moderate drinkers responded more to alcohol prices than either heavy or light drinkers.

Governments may also regulate alcohol advertising as another market-based method of influencing consumer purchases. Studies using data from the United Kingdom and Canada have found mixed results for the influence of advertising and advertising bans on overall alcohol consumption (Smart 1988; Saffer 1995). Other studies have shown a relationship between alcohol advertising and motor vehicle crashes. McCarthy and Ziliak (1990) found that cities in California with higher drunk driving crash rates were more likely to establish Mothers Against Drunk Driving (MADD) chapters. Once formed, the presence of a MADD chapter, with its education campaign, reduced future crash rates. Saffer also found that alcohol advertising increases motor vehicle fatalities, particularly those occurring at night

(when alcohol use is more likely to be a factor in the crash) (Saffer 1997).

Finally, Goel and Morey (1995) and Moore (1996) showed that cigarettes and alcohol are complementary goods, each responding to price and availability conditions for the other. Their results suggest that higher taxes on alcohol or advertising bans might bring added health benefits by reducing tobacco use.

### EFFECTS OF RESTRICTIONS ON AVAILABILITY AND PENALTIES FOR VIOLATIONS

A number of studies estimating the demand for alcohol have tested specific access control and legal variables. Ornstein and Hanssens (1985) found that the minimum drinking age and legal Sunday sales were strongly correlated with beer consumption but uncorrelated with consumption of distilled spirits. Waters and Sloan (1995) found that the minimum drinking age and the fine for first-offense drunk driving significantly reduced alcohol consumption. Osterberg (1992, 1993) reviewed Scandinavian studies that found that laws increasing outlets where beer could be sold and changing bar and liquor store hours, and strikes that temporarily closed liquor stores, all had significant effects on alcohol consumption.

Other studies have used county-level data on motor vehicle crashes to link

<sup>2</sup> *The rational addiction hypothesis also predicts that heavy drinkers—specifically those addicted to alcohol—will respond more to price changes than casual drinkers. This hypothesis and the evidence for it are discussed in the section of this chapter describing a more complete model of alcohol control.*

alcohol control to highway safety. Winn and Giacompassi (1993) found that dry counties in the State of Kentucky had significantly lower alcohol-related motor vehicle crash rates than wet counties. Blose and Holder (1987) found that North Carolina counties that liberalized liquor-by-the-drink laws suffered increased fatalities. Coate and Grossman (1988), and Saffer and Grossman (1987*a*, 1987*b*) found that States with higher drinking ages and a higher proportion of the population living in dry counties (as well as States with higher liquor taxes) had significantly fewer youth motor vehicle fatalities. Jewell and Brown (1995, 1996) found that dry counties in Texas had fewer alcohol-related motor vehicle fatalities, and that counties with a lower density of alcohol licenses had fewer alcohol-related motor vehicle accidents.

Studies have shown that penalties for driving while intoxicated have a deterrent effect. Sloan and Githens (1994) found that insurance surcharges for drunk driving arrests significantly reduced future incidents. Sloan and colleagues (1995) also found that reduced individual financial liability for drunk driving increased survey-reported binge drinking, but that policy deterrents had little effect on the probability that a binge drinker drove. Saffer and Chaloupka (1989) found that laws allowing police to administer breath tests prior to arrest for drunk driving significantly reduced motor vehicle fatalities. Chaloupka and colleagues (1993) compared the relative effectiveness of various policies in reducing drunk driving fatalities, concluding that severe drunk driving penalties, as well as taxes on beer, are the most effective alcohol supply policies.

## EFFECTS OF ALCOHOL PROHIBITION

The large and growing empirical literature demonstrating that limited control of supply is an effective deterrent in North American and some European populations might suggest that control in its extreme form—complete prohibition—would provide even more protection from alcohol-related health and social problems. Many researchers have argued, however, that complete alcohol prohibition is ineffective for combating alcohol abuse. While not testing hypotheses empirically, they present a number of arguments against prohibition as good public policy, particularly for a minority group such as American Indians. Some of the more prominent themes in the literature are listed here:

- Alcohol control holds out hope as an easy solution to a complex problem (Back 1981; May and Smith 1988; Heath 1989).<sup>3</sup>
- One cannot prevent people from obtaining alcohol if they really want it (Heath 1989).<sup>4</sup>
- Bootlegging impoverishes people and supports crime (Waddell 1990).

<sup>3</sup> May and Smith (1988) found that only 19 percent of Navajos they surveyed supported legalization of alcohol on the reservation. However, they suggested that inaccurate stereotypes—e.g., a majority believed Indians have a physical weakness for alcohol compared with other ethnic groups—contributed to the belief that prohibition was a simple solution to the complex problem of alcohol abuse.

<sup>4</sup> Heath (1987) noted that attempts at prohibition across cultures have never worked "except when couched in terms of sacred or supernatural rules." (p. 46)

- People do not learn how to drink responsibly; prohibition prevents constructive socialization involving responsible alcohol use (Heath 1987; Peele 1987).
- Prohibition encourages individuals to engage in risky behavior to obtain alcohol (May 1989).
- Abusers will simply shift to another, perhaps more toxic, mind-altering drug (Peele 1987; Oetting and Beauvais 1989; May 1992).
- Prohibition encourages social norms favoring problem drinking (Brody 1971; Peele 1987).
- Social availability, not physical availability, is what influences consumption (Smart 1980).
- It is inappropriate to transfer models from northern European cultures to other cultures (Peele 1987).
- Prohibition takes the focus off what does work—education and positive programs working on alcohol demand (Heath 1992).

In addition to practical, theoretical, and clinical evidence against the effectiveness of the strictest forms of alcohol control, a growing cross-cultural literature has demonstrated that prohibition does not solve social and health problems stemming from alcohol misuse. Heath (1987) reviewed a large number of studies of alcohol use, noting that although drunkenness is common across cultures, problem drinking is rare. He concluded that drinking in most societies is a method of relieving stress and promoting sociability and carries embedded social norms and values. Social rules about who can drink under what

terms are typically strong, and they serve to regulate the effects of drinking on individuals.

The United States' grand experiment with prohibition provides an empirical test for the effect of strict alcohol control on drinking and health outcomes. Prohibition was in effect throughout the Nation for nearly 14 years, from January 1920—1 year after the 18th Amendment to the Constitution was ratified—until December 1933, when it was repealed by the 21st Amendment. All indicators of alcohol consumption fell dramatically during the first years of Prohibition. By the mid-1920s, however, estimated consumption had returned to more than 70 percent of its previous level. Alcoholism death rates actually exceeded those of pre-Prohibition years, due to consumption of poor-quality alcohol (Warburton 1932; Miron and Zwiebel 1991). Miron and Zwiebel concluded that the deterrent effect of Prohibition was weak, even though it raised the price of alcohol at least threefold.

### STUDIES OF ALCOHOL CONTROL AMONG AMERICAN INDIAN GROUPS

One of the problems with prohibition is that while it deters drinking as a whole by raising the cost substantially, it also exacerbates social issues concerning drinking and deviance. Although researchers frequently note a constructive role for alcohol in creating culture and establishing behavioral norms in many societies, problem drinking is tied to deviant



behavior.<sup>5</sup> Unlike Europeans and many other peoples around the world, American Indians and some other indigenous groups had little or no history of a constructive cultural role for alcohol. Also, the nature of colonial conquest and rule provided (and still provides) conditions of frustration and powerlessness that instigate problem drinking as an act of rebellion and escape from both colonial and traditional authority (Lurie 1971; Klausner and Foulks 1982; Brady 1990; Keaulana and Whitney 1990; Bachman 1992). One could argue that this historical environment makes strict alcohol control even less likely to succeed among American Indian groups. A number of case studies bear out this argument.

A survey of Indians both on and off reservations from a variety of tribes showed that residents of dry reservations generally drink larger quantities and drink more frequently than urban Indians with easy access to alcohol (Weibel-Orlando 1990). May (1976) reviewed alcoholism and violent deaths on a number of Indian reservations for the period 1959-74. He found that both alcoholism death rates and violent death rates were lower on reservations that had repealed prohibition after 1953 compared with the ones remaining dry. When Landen (1996) compared deaths on the same reservations for the period 1979-90, he found that unintended injury death rates had declined for both groups, but that suicide rates had increased on wet reservations. On balance, death rates were now slightly higher on the wet

reservations, but the difference was not statistically significant.

Other studies have reported adverse effects of alcohol control with particular Native groups. Levy and Kunitz (1971) found higher liver cirrhosis rates among the Hopi, who condemn drinking, than among the Navajo, who are more tolerant about its use. Berman and Leask (1994) compared violent death rates over the period 1980-90 for Alaska Natives living in urban areas and small communities. Few of the small communities have alcohol outlets, and most are inaccessible by road from alcohol sales outlets. Native residents of towns—where alcohol is legal and easily accessible—had much lower death rates due to accidents, suicide, and homicide than residents of small predominantly Native communities.

A major methodological problem with all the cross-sectional studies mentioned above is that they confound the outcomes of alcohol control policies with intercultural variation in attitudes about alcohol, which influence policies as well as drinking practices. For example, tribes and communities more tolerant of alcohol use are both less likely to suffer from problem drinking as a form of deviant behavior and less likely to try to control alcohol supply. Communities with more serious alcohol problems may be more likely

<sup>5</sup> Douglas (1987), summarizing cross-cultural literature on alcohol consumption, concluded that problem drinking as a concept differed across cultures. It was not necessarily related to the level of alcohol consumption, but rather to a pattern of drinking outside prevailing social norms.

to try to regulate alcohol.<sup>6</sup> The research question should not be whether communities with controls appear to do better than those without controls, but rather whether imposing controls in a given community reduces problem drinking and its effects.

The few studies attempting to perform such a comparison have produced mixed results. Smart (1979) studied three Native communities in the Canadian Arctic that implemented controls on alcohol in 1976, finding no effect when compared with neighboring communities not instituting controls. However, O'Neill (1985) reported that prohibition in one of these communities was associated with a number of positive social changes, as well as a decrease in abuse of other drugs. May (1991) described a "natural experiment" in which the fetal alcohol syndrome rate dropped in a "small Indian community" from 14 per 1,000 children to zero for 5 years when royalty checks stopped being distributed to individual families.

Alaska's State local option law, implemented in 1981, provides Alaska Native communities the opportunity to select from a number of alcohol control options by holding a public vote. Landen and colleagues (1997) found that the total violent death rate between 1990 and 1993 was 1.6 times as high for Alaska Natives living in communities with legal alcohol importation as for residents of dry communities. However, communities with attitudes more strongly discouraging alcohol abuse might also have been more likely to select strict control options, exaggerating the apparent

statistical effect of prohibition. Chiu and colleagues (1997) found that alcohol-related outpatient clinic visits declined sharply in an isolated Alaska Native community when alcohol prohibition was in effect, although residents may have gone elsewhere to drink and be injured. Berman and Hull (1996) compared accidents, suicides, and homicides under various local options for the 97 villages that passed restrictions, to death rates in the same communities during periods when there were no controls. The results, summarized in table 1, show that Alaska Native violent death rates were generally lower during periods when alcohol sales, importation, or possession were restricted than during periods with no controls. For the group of 84 communities that banned sale and importation, annual homicide rates declined by 71 per 100,000 and accident death rates dropped by 66 per 100,000 when alcohol controls were in effect.

Findings for the Alaska local option law may not apply to other American Indian communities for two reasons. First, Alaska communities are much more isolated (most are not accessible by road), making prohibition much easier to enforce than in many Indian

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<sup>6</sup> Levy et al. (1987) found that suicide and homicide rates were higher in acculturated (pro council) Hopi villages than in traditional (anti council) villages. Cirrhosis, but not alcoholism, was also higher among residents of acculturated villages, and higher still in off-reservation communities. They concluded that chronic risky drinkers were more likely to be expelled to off-reservation communities from traditional villages. Traditional communities were also more likely to adopt strict alcohol control.

reservations in the contiguous States. Second, Alaska communities must circulate a petition and hold a referendum to exercise the local option to control alcohol, whereas reservation communities elsewhere must elect to legalize its use. Holding an election to ban alcohol may be viewed by residents as a step they may take to establish community norms about sobriety,

an issue that will be discussed later in this chapter.

It is important to note that the studies of Indian populations reviewed in this section all evaluate the outcomes of very strict forms of alcohol control. Although the results of research on the effects of prohibition are mixed, the null hypothesis would argue that market regulation and

**Table 1.** Comparison of Violent Death Rates Under Different Alcohol Control Regimes for Alaska Natives Living in Local Option Communities, 1980-93 (Annual Rates per 100,000 Persons).

Local Option	Number of Communities	Type of Death	Mean Death Rate Without Control	Mean Death Rate With Control	t Statistic for Difference
Limited package store license	3	Accidents	217.2	46.1	2.41
		Suicides	36.9	25.1	0.55
		Homicides	38.4	26.0	0.58
		Total	292.5	97.1	1.76
Ban sale	7	Accidents	299.4	212.2	0.88
		Suicides	168.2	57.2	1.87
		Homicides	73.7	34.0	0.65
		Total	541.4	303.5	1.55
Ban sale and importation	84	Accidents	222.1	156.5	1.86*
		Suicides	94.5	86.7	0.32
		Homicides	98.9	27.4	2.93***
		Total	415.5	270.6	2.50**
Ban possession	23	Accidents	103.3	94.7	0.29
		Suicides	49.1	86.5	-1.36
		Homicides	33.5	17.9	0.94
		Total	185.9	199.1	-0.26
Any alcohol control	97	Accidents	226.8	152.2	2.41**
		Suicides	95.4	85.6	0.45
		Homicides	91.7	26.0	3.07***
		Total	413.9	263.8	2.93***

\*Statistically significant at the 10 percent level.

\*\*Statistically significant at the 5 percent level.

\*\*\*Statistically significant at the 1 percent level.

Source: Berman and Hull 1996.

more moderate restrictions on physical availability would work as effectively with Indians as they do with other populations. One could suppose that less draconian measures might be less likely to promote a deviant backlash. Unfortunately, no studies evaluating the outcomes of moderate price and availability measures have been performed for American Indian populations.

May (1996) reviewed studies of alcohol use and noted that drinking prevalence varies widely by tribe, although it is generally lower than in the U.S. general population. His analysis cautions us that findings from studies of one group may not apply to other groups with different historical and cultural influences. Empirical research on alcohol policy would benefit from a more complex approach that goes beyond modeling total alcohol consumption and addresses alcohol use as individual behavior in a social context, as spelled out in the next section.

### A MORE COMPLETE MODEL OF ALCOHOL CONTROL

Much of the empirical literature on alcohol control treats alcohol consumption as the commodity of interest. Yet the harmful effects of alcohol stem not from alcohol consumption generically but rather from activities involving problem drinking. Problem drinking might include, for example, frequent intoxication leading to alcohol dependency; binge drinking (five or more drinks per occasion); and risky drinking—drinking while preg-

nant or drinking and driving. The quantity of alcohol consumed may not measure problem drinking accurately. Alcohol consumption is an input to problem drinking; a necessary but not sufficient condition. It is not the outcome of concern. Changing the way that alcohol is used matters as much for prevention of its harmful effects as whether it is consumed at all.<sup>7</sup>

One approach that has been developed by economists to address a particular aspect of problem drinking—alcohol dependence—is the rational addiction hypothesis (Becker and Murphy 1988). Under this hypothesis, the “rational addict” maximizes the long-term utility (satisfaction) of consuming an addictive substance, given expected prices and preferences. The main empirical proposition derived from the hypothesis is that consumption over time responds to anticipated future as well as current and past consumption and prices. Initial empirical tests of the hypothesis for cigarette smoking gave promising results (Chaloupka 1991, 1992; Becker et al. 1994).

Waters and Sloan (1995) and Grossman and colleagues (Grossman 1993; Grossman et al. 1998) tested the rational addiction hypothesis for

<sup>7</sup> *The health and safety outcomes caused by problem drinking are, arguably, the issues of greatest concern. These outcomes depend on behavior while intoxicated, health care delivery systems, and community responses to problem drinking, not just on the level or frequency of problem drinking. The approach suggested here is consistent with a “harm reduction” strategy for drug abuse intervention. Unlike most other drugs, however, alcohol is freely and legally available almost everywhere in North America.*

alcohol consumption. Grossman (1993) found that data on cirrhosis mortality rates were consistent with the hypothesis, but that aggregate alcohol consumption data did not support it. Waters and Sloan found more support for the rational addiction hypothesis using individual consumption data from the 1983 National Health Interview Survey. Grossman and colleagues (1998) found statistical support for addictive behavior in panel data on annual drinks per capita, although their results implied implausible parameters for drinkers' preferences.<sup>8</sup>

No studies have yet attempted to test the rational addiction hypothesis for American Indian populations. The main challenge in applying it comes with study design: tests of the hypothesis require the researcher to observe the degree to which current consumption patterns might respond in advance to expected future changes in alcohol control policies.<sup>9</sup> A more serious limitation of the rational addiction hypothesis for addressing alcohol policy, however, is that it addresses only one type of problem drinking: alcohol dependence.<sup>10</sup> In addition, its focus—like nearly all the economic literature—is on individual choice over patterns of alcohol consumption. It places in the background social, cultural, and community forces that contribute to problem drinking behavior. One of the central issues with alcohol policy is how to encourage responsible drinking instead of problem drinking. For these reasons, research on alcohol policy for American Indians could benefit from moving from modeling alcohol consumption to modeling drinking behavior directly.

## PROBLEM DRINKING VERSUS RESPONSIBLE DRINKING

This modeling approach treats responsible drinking (often called "social" drinking) and problem drinking as separate activities that are both produced and consumed by the drinker to generate some type of satisfaction. Individuals convert inputs of alcohol, time, and (usually) the companionship of drinking partners into a valued experience (table 2); the model proposed here is an application of the household production model first articulated by Becker (1965). An environmental change that makes problem drinking less attractive is likely to encourage responsible drinking, and vice versa. In the language of economics, the two forms of drinking are substitutes, especially for youth, who are learning drinking styles. Individuals who are alcohol dependent, how-

<sup>8</sup> In particular, the coefficients on past and future alcohol consumption in Grossman et al. (1998) imply a large negative discount rate: e.g., that drinkers value future consumption much more than current consumption.

<sup>9</sup> The Waters and Sloan (1995) study illustrates the difficulties with empirical applications of the rational addiction hypothesis. Testing the hypothesis requires future consumption levels, but their survey interview data contained only current and past consumption. Lacking a panel design that would allow respondents to provide the "future" data point, the researchers instead projected future consumption based on an estimated relationship between prior and current drinking.

<sup>10</sup> The inability of the rational addiction hypothesis to model other forms of alcohol consumption probably explains why alcohol studies to date have found only weak empirical support.

ever, may not have a choice about how to drink. Consequently, the model is relevant to policy for primary prevention, but not necessarily for treatment of alcohol-related problems.

Table 2 shows that responsible drinking and problem drinking involve the same inputs but produce different outputs. While the release of stress facilitated by responsible alcohol consumption produces generally constructive socialization effects, intoxication from problem drinking is often associated with antisocial or deviant behavior and involves a high risk to health and safety. The individual chooses the amounts of problem drinking, responsible drinking, and non-alcohol-related activities that provide the greatest satisfaction, constrained by available time and money (and possibly by the availability of drinking partners).

The model suggests that the choice of drinking activities depends on four household economic factors: price of alcohol (the money cost of obtaining alcohol), ease of access to alcohol (affecting the time cost of obtaining alcohol), income (ability to pay for alcohol), and amount of free time for

obtaining alcohol and engaging in drinking activities. How much one chooses to engage in either responsible drinking or problem drinking, as well as the choice of one type over the other, depends on a number of other factors, such as individual psychological (and possibly inherited) factors, environmental stressors, social factors (behavioral norms of family, friends, and community), and cultural and spiritual values.

Responsible drinking appears to have a number of advantages compared with problem drinking. These advantages include lower time cost, lower money cost (less alcohol needed), no lingering physiological effects (hangovers), lower risk of injury to self or others, greater sociability benefits, and (possibly) greater conformity with Native cultural values. Of course, the advantages of responsible drinking for any particular group strongly depend on prevailing social and cultural norms regarding drinking styles and behavior under the influence. Availability of alcohol and a perceived obligation to drink at social gatherings have been shown to have a strong influence on the prevalence of

Table 2. Inputs and Outputs of Drinking Activities.

	Responsible Drinking	Problem Drinking
Inputs	Alcohol Free time	Alcohol Free time
Outputs	Other drinkers "Relaxation" Socialization Few health effects	Other drinkers Intoxication Rebellion, acting out High risk to health and safety

drinking and the amount consumed, and drinking for social motives—to be sociable or to celebrate with others—increased the frequency of heavy drinking (Abbey et al. 1993). Indian youths with strong attachments to families that value culture and schooling and discourage alcohol abuse are less likely to abuse alcohol, marijuana, or inhalants, regardless of levels of self-esteem, depression, and anxiety (Oetting et al. 1988; Oetting and Beauvais 1989).

## HYPOTHESES GENERATED BY THE MODEL

By specifying a more complex, but still enormously simplified view of reality, the model outlined in the preceding section supports the views of May (1992) and others that alcohol abuse is a complex problem without a simple solution. The usefulness of a theoretical model, however, depends on whether it generates testable hypotheses to inform public policy—in this case policy for prevention of alcohol-related health and social problems among American Indians. In this section, I first discuss hypotheses that the model suggests about economic factors—those related to time and money. I then address hypotheses about environmental, social, and cultural factors.

### HYPOTHESES ABOUT TIME AND MONEY

There are two hypotheses about economic factors.

*H1: Taxation (or higher prices) reduces problem drinking more than it reduces responsible drinking.* A tax increase raises the price of alcohol, dis-

couraging both responsible drinking and problem drinking. The model suggests, however, that because problem drinking usually involves consumption of larger amounts of alcohol, it could be more sensitive to alcohol costs than responsible drinking. As noted above, many empirical studies on the general North American population support this hypothesis. Tests for American Indian populations would be useful and timely.

*H2: Stiff penalties for alcohol-impaired driving reduce problem drinking.* These penalties raise the relative cost of problem drinking. Empirical studies of the U.S. population appear to support this hypothesis. Does it apply to Native populations?

### HYPOTHESES ABOUT AVAILABILITY

If restrictions on availability merely increase the time and money cost of obtaining alcohol, then the effects of such restrictions are likely to parallel those of an increase in the price. The model suggests, however, that policies limiting access to alcohol may have more complex effects. One needs to look at the details of the measure, and how it applies to the specific environment. Here are some examples.

*H3: Prohibition of alcohol sale but allowing importation is ineffective in controlling problem drinking and may make problems worse.* This is the status—legal or de facto—on many reservations in the United States and Canada and in many Alaska Native villages. The model predicts likely problems with this policy. Importation requires either personal travel or freight shipment to bring

alcohol and consumers together. The total cost of an alcohol purchase varies with the number of purchases, but little with the quantity purchased at a time, raising the cost of responsible drinking relative to problem drinking. (See Klausner and Foulks [1982] for a description of the problems generated by a ban on sale with legal importation in one Alaska community.)

*H4: Prohibition of sale and importation, where it can be enforced, reduces problem drinking in the community.* This is the local option most favored by Alaska Native villages. It is easy to import small quantities of alcohol without detection but more difficult to bring in large quantities. Prohibition of importation encourages individuals wishing to engage in problem drinking to go elsewhere—to the bordertown or its equivalent or to urban areas. This may improve the situation in the Native community—by removing a harmful social influence—at the same time as it places the problem drinker in an environment where more health services may be available. It may also, however, encourage individuals to engage in risky behavior to obtain alcohol where it is legal, such as traveling in bad weather or driving back home drunk.

*H5: Prohibition of alcohol possession is no more effective, and may be less effective, than an importation ban.* Strict tribal control of alcohol possession makes alcohol control easier to enforce. However, if the penalty for possession of one bottle of beer is as severe as that for four cases of vodka, the only drinking that takes place is likely to be problem drinking.

*H6: Tribally operated or licensed alcohol sales under policies that promote responsible drinking reduce problem drinking* (May 1992). If strict alcohol control raises the risk of social drinking, in the form of either legal or moral sanctions, then it may increase the prevalence of problem drinking.<sup>11</sup> The model suggests that tribal control schemes that make alcohol available in small quantities at a time encourage people to shift from problem drinking to responsible drinking.

#### HYPOTHESES ABOUT ECONOMIC AND SOCIAL POLICY

There are three hypotheses about economic and social policy.

*H7: Reducing physical risks to heavy drinkers increases problem drinking.* Beauchamp (1980) and May (1992) recommended policies to reduce risk of physical harm to intoxicated persons. While this may be a sound strategy from an overall public health viewpoint, the model suggests that making problem drinking safer removes a deterrent to intoxication that could in fact change people's drinking activities.

*H8: Large amounts of unearned income increase problem drinking.* Lack of money and time—time free of responsibility—limit all drinking activities but especially constrain problem drinking. The model suggests that situations that provide money without responsibility—such as cash settle-

<sup>11</sup> Of course, if problem drinking arises from the inability of drinkers to learn responsible drinking habits, then the negative effect of alcohol control may increase (see Peele 1987).



ments or large transfer payments—may encourage problem drinking.

*H9: Jobs reduce problem drinking.* Employment takes sobriety, promotes individual responsibility, and uses up free time. Increasing employment should reduce problem drinking, even though the increase in income may lead to greater overall consumption of alcohol. The positive effect of employment in encouraging responsible drinking especially applies to youth.<sup>12</sup>

#### HYPOTHESES INVOLVING SOCIAL AND CULTURAL FACTORS

Prevailing social and cultural norms and issues of legitimate power and authority complicate the effects of alcohol control efforts. Simple control-of-supply models that work well to explain preventive effects of alcohol control policies on the general North American or European population may not apply to minority populations such as American Indian groups with distinct cultural values. However, the model outlined in the previous section suggests some additional hypotheses about interactions between alcohol control and social and cultural factors affecting drinking behavior.<sup>13</sup> Here are some ideas taken from the vast literature on alcohol use among American Indians.

*H10: Communities with few responsible drinkers will accomplish little by trying to keep alcohol legal but regulate its use.* This hypothesis will undoubtedly have its critics. However, May (1994, 1996) noted that a larger fraction of American Indian adults in some tribes do not drink at all compared with the general North American population, and that rates of

problem drinking vary widely among tribes. One could argue that the presence of a large fraction of mature adults choosing not to drink at all suggests that the community lacks social and cultural norms promoting "healthy" drinking patterns.

*H11. Alcohol control perceived as imposed without legitimate authority will not work and may increase problem drinking.* In this instance, problem drinking may increase its status as an act of defiance. The increased satisfaction gained from drinking to "act out" may more than offset the effect of prohibition to raise the cost of alcohol. Alcohol abuse may increase even as responsible drinking declines.

*H12. Any policy adopted with community consensus works better than one adopted with community division.* This hypothesis is a corollary to the last one; social pressure for sobriety is stronger when the community agrees on objectives and strategy. Everyone seems to agree that policy imposed on a divided community works less well than one developed by community consensus (see Beauvais 1992; Heath 1992; May 1992). Perhaps it is too obvious a hypothesis to test. However, rigorous empirical studies that

<sup>12</sup> Beauvais (1992) noted the critical nature of the transition from adolescence, where Indians drink more heavily than other U.S. youth, to adulthood, where Indian drinking patterns more closely resemble those of other groups.

<sup>13</sup> Another area of policy, which I ignore here, aims to influence drinking styles—social availability (Smart 1980). May (1992) enumerated policies that try to shape drinking practices toward responsible drinking.

compare measures of the degree of community consensus about whatever alcohol policy is adopted to health outcomes under that policy would send a clear signal for design of prevention efforts.

### ALCOHOL CONTROL IN COMMUNITY COHESION AND EMPOWERMENT

May and colleagues (May et al. 1993*b*; May 1995) have argued that the most effective prevention strategies are community mobilization efforts, designed from within the community. If the ability of communities to mobilize against alcohol abuse depends on consensus, then one might ask how alcohol control may contribute to developing community cohesion and empowerment. One often hears the phrase "caught between two worlds" to describe the difficulty American Indians—and especially Indian youth—have in meeting the expectations of elders and "traditionalists" in their own communities, as well as adapting to the dominant non-Indian culture. Navarro et al. (1997) reported that most students in a program to prevent alcohol and other drug abuse among American Indian youth believed that alcohol abuse and depression in Indian communities resulted from "the difficulty of bridging two worlds" rather than from ignorance or moral weakness.

Oetting and Beauvais (1990–91) discussed socialization patterns for Indian adolescents. They argue that the issue is not one of choosing which of two (or more) cultures to join, but rather a problem of integration into

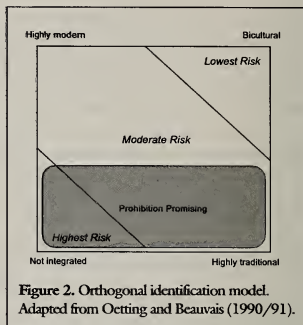


Figure 2. Orthogonal identification model.  
Adapted from Oetting and Beauvais (1990/91).

either or both. Figure 2 illustrates their orthogonal identification model. The horizontal scale represents the degree to which the individual identifies with traditional values, and the vertical scale represents the degree of identification with modern values. Oetting and Beauvais suggested that youth who have the highest risk of drug use are those who have difficulty identifying with either traditional or modern value systems. Bicultural individuals—those who identify with both modern and traditional values—have the least risk.

One might characterize the role communities play in the orthogonal identification model as providing integration pathways for individuals. Elements of these pathways include opportunities for youth to succeed in traditional and modern roles, leadership role models and mentors, and opportunities that facilitate or discourage identification. While communities and the individuals that make up the communities may face a variety of environmental insults, those com-

munities that offer a diversity of pathways for youth—bicultural or multicultural communities—are likely to prove more resilient. Individuals in more modern communities are also less likely to respond positively to prohibition, since drinking plays an important role in social integration in mainstream North American culture (Heath 1987).

Although Oetting and Beauvais developed the orthogonal identification model to explain socialization patterns of Indian adolescents, the same principles apply to integration of adults into the community. Several studies have found that a high percentage of adult American Indian drinkers in initial surveys had stopped drinking on their own by the time they were resurveyed about two decades later (Leung et al. 1993; Kunitz and Levy 1994). May (1996) described this phenomenon as "maturing out." Although most American Indian women do not drink at all, a small minority drink heavily and have a number of children with alcohol-related birth defects (May et al. 1993a).

How does alcohol policy facilitate or inhibit the process of maturing out, if it has any effect at all? A particularly important research question would be to determine factors that promote earlier maturing out for young women who might otherwise bear alcohol-affected children. Exploring this question would require undertaking longitudinal studies that obtain more information about the timing of drinking and abstention episodes and sort out gender differences in the maturing-out process. Oetting and Beauvais' work suggests that commu-

nity cohesion and empowerment again could play a strong role. Using their framework as a guide, the model of drinking behavior outlined above suggests the following additional hypotheses about the role of alcohol in developing community cohesion and empowerment.

*H13: Prohibition is more effective in more traditional Native communities.* Social drinking has not been present historically as a constructive social force; alcohol consumption has usually been present only in its deviant form. The growing indigenous sobriety movement argues that drunkenness debases the individual's Native values and heritage. Alcohol control by the traditional community has a double effect: it reinforces community values and raises the cost of alcohol.<sup>14</sup>

*H14: Alcohol prohibition is likely to fail in more modern communities.* Success in modern society, such as in college or on a job, requires individual responsibility. Community control of alcohol makes learning to drink responsibly—one area of individual responsibility in modern society—more difficult.

*H15: Support of churches for alcohol policies is not a good predictor of their likely success.* Klausner and Foulks (1982) noted that church membership was a good predictor of an individual's stand on alcohol. However, as a typically modern entity, church influence is likely to divide the community

<sup>14</sup> Lee (1993) studied crime rates and patterns of social control for eight dry Yup'ik villages in Alaska. Villages affiliated with the Yup'it Nation—a traditional sovereignty movement—had lower rates of violent crime and alcohol-related arrests than neighboring villages.

unless, as is the case in some south-western tribes, it enjoys near universal acceptance as a public authority.

*H16: Alcohol statutes that the community wants enforced but are rarely enforced may be worse than useless.* Mail (1992, p. 107) stated "Prohibition, in those communities that continue struggling to maintain and enforce it, is an artifact of law. It is not a reality within Indian communities." Laws that are not enforced encourage disrespect for authority and probably contribute to deviant behavior. Empirical studies evaluating varying enforcement policies and effects would be a useful contribution.

It bears repeating that in testing these hypotheses, social and cultural variations among tribes, or even across communities in the same tribal area, limit the usefulness of simple cross-sectional studies. Looking across tribes, researchers may be observing cultural differences rather than effects of differing alcohol control policies. Further complicating research design is the likelihood that communities with higher rates of alcohol-related problems will adopt stronger control measures. Studies should be designed carefully to try to sort out these confounding influences, or else researchers should follow individual communities through time.

### CONCLUSIONS: DIRECTIONS FOR RESEARCH

Despite social science research focusing on the social role of alcohol, most research on alcohol misuse remains focused on individuals at risk. In this chapter I have outlined a model of

problem drinking and responsible drinking that suggests that alcohol policy—which acts to restrict an input to both types of drinking—provides different incentives for individual drinking behavior in different social and cultural settings. Research on alcohol policy for American Indian populations should move beyond thinking only about individuals or only about communities to thinking about the interaction of the two.

I have also outlined a series of hypotheses suggested by the model that can in principle be tested. Although some of these hypotheses may contradict others, they may still provide direction for empirical research on alcohol policy. Some of the hypotheses may seem trivial. But if they are so self-evident that they do not need verification, why are they not part of a comprehensive alcohol policy advocated by May (1992) and others?

The discussion in this chapter suggests that policy affecting American Indians about non-alcohol issues may tend to counteract the effects of alcohol control policies, or unintended consequences of alcohol policy may affect sociocultural factors that influence drinking patterns and backfire. In the final analysis, alcohol control is only one of many opportunities to empower communities. But alcohol control can contribute to community empowerment. How one controls alcohol is likely to be as important, if not more important, than the type of policy implemented.<sup>15</sup> This leads to the final hypothesis.

<sup>15</sup> *This is an element in the dialog between Peele (1987) and Room (1987).*

H17: Anything that empowers the community reduces problem drinking and its effects; H17a: Anything that disempowers communities increases problem drinking and its effects.<sup>16</sup> This is, in fact, a testable hypothesis. If empirical studies support it, then we may not need to worry about alcohol policy. Researchers might focus instead on opportunities to empower communities, leaving matters of alcohol policy to communities themselves.

<sup>16</sup> May and Moran (1995) suggested that community empowerment should be an important goal for alcohol abuse prevention policies among Native Americans. Community empowerment is used here to mean effective self-government at the local (community) level. Cornell and colleagues (1998) reviewed the literature that has found a positive correlation between the strength of tribal self-government in the United States and indicators of well-being.

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## Chapter 6

# Alcohol Prevention Programs Among American Indians: Research Findings and Issues

Linda Parker-Langley, Ph.D.

*KEY WORDS: Native American; prevention research; culturally sensitive prevention approach; treatment outcome; community-based prevention; harm reduction; recommendations or guidelines*

The 1990 census reported over 2 million self-identified American Indians in the United States (U.S. Bureau of the Census 1992). Within this population there is tremendous diversity, including multiple tribes and languages spoken, varying degrees of Indian ancestry, and environments from rural to urban. Yet despite this diversity, certain elements are common and tend to bind the population together. Among these commonalities are high birthrates, relatively low median age, important shared cultural values and traditions, and alarmingly disproportionate rates of alcohol-related death when compared with the U.S. general population (Indian

Health Service [IHS] 1996). Further examination by age group reveals great disparity in mortality between Indian youth and adolescents in the U.S. general population for motor vehicle crashes, suicide, and homicide (May 1986; IHS 1996). This disparity is greatest in the younger ages, with homicide and suicide two times greater for Indian youth than non-Indian youth between the ages of 5 and 14 (IHS 1996).

A 1988-90 study conducted by the IHS in collaboration with the University of Minnesota provided insights into the lives and health habits of Indian youth nationwide. Nearly 14,000 American Indian adolescents

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were surveyed as part of a convenience sample. The report included findings that 33 percent of all youth surveyed reported ever having driven under the influence of alcohol, and 22 percent reported having ridden with a driver under the influence (Blum et al. 1992; University of Minnesota Health Center 1992). The risks were found to be much more prevalent among youth who reported weekly alcohol use, indicating a strong correlation between alcohol use and risk of motor vehicle injury or death. Although the majority of reservation youth surveyed did not report depression (82 percent), 65 percent did report being bored. Of the individuals who did report being emotionally distressed, nearly half had attempted suicide, compared with 16.9 percent of all youths (Blum et al. 1992; University of Minnesota Health Center 1992).

The survey also found that nearly half of all students in grades 7-9 reported ever having used beer or wine, and more than 25 percent of students in these grades had used hard liquor. ("Ever used" is a common survey question with youth to determine lifetime experience with alcohol and other drugs [AODs]. Although indicative of use, it does not help in determining quantity and frequency measures or patterns of use, such as binge drinking. It is, however, useful for establishing trends over time.) These findings are consistent with studies on age at first involvement, quantity and frequency of drinking, and the negative consequence of alcohol use by youth. For Indian youth, the consequences of alcohol use are

more severe than among U.S. All-Races youth averages (Oetting et al. 1988). Findings that also raised concern for Indian youth in the University of Minnesota study were that fewer than one-half of the study participants lived in a home with two parents, and many worried about domestic abuse, economic survival, and parents' substance abuse. In addition, a large percentage of the respondents reported being overweight and only in fair or poor health. These students also reported relatively poor school performance and low rates of high school completion (University of Minnesota Health Center 1992).

The data on AOD use by Indian youth only serve to reinforce the often-expressed need by tribes and agencies working with Indian people to have comprehensive community- and school-based AOD abuse prevention and health promotion programs available for all Indian populations. Many different prevention programs have been developed and implemented over the past 15 years to address these needs. Unfortunately, there are far fewer programs directed at or developed for Indian adults, with the exception of several programs directed at the prevention of alcohol-related birth defects (May and Hymbaugh 1989; Plaisier 1989; Masis and May 1991). It is also possible to find in the literature a few recommendations for the development of programs designed to decrease risk behaviors in Indian adults (Guiliano et al. 1998; Quinlan et al. 1998). These, however, are much less prevalent than discussions of programs for

Indian youth. The success of reported programs is quite varied, and documentation is often inadequate or difficult to find. In developing this overview of prevention research and the lessons to be drawn from this work, a search of the published literature was conducted. This search was augmented by a review of tribal program and Federal reports, as well as by personal communication with Indian leaders.

In 1990, the Institute of Medicine (IOM) promulgated a new model for acquisition and/or development of alcohol problems. Instead of the familiar public health continuum of primary, secondary, and tertiary levels, the IOM Committee for the Study of Treatment and Rehabilitation Services for Alcoholism and Alcohol Abuse proposed a "terminological map" using standing alcohol problem perspectives and associated terminology to discuss various aspects of intervention (IOM 1990). The terminological map uses a triangle to represent the population of the United States, with alcohol consumption (ranging from none to heavy) depicted along one side and alcohol problems (from none to severe) depicted along the other side. The map includes an indication that alcohol consumption levels and degree of problems vary from time to time, and that the larger proportion of the population does not use alcohol, use to excess, or have serious problems with alcohol. The IOM committee proposed that approximately 20 percent of the U.S. population consume substantial amounts of alcohol, and approximately 5 percent

drink heavily. Epidemiologic data suggest that these proportions may be greater for Indians, at least Indian males. For purposes of preventive interventions, programs would be directed at the lower half of the triangle where problems range from none through mild to moderate. This would include a large proportion of Indian youth. However, since no research was identified that referenced this new model, for the purposes of this chapter, I will use the basic public health continuum to discuss studies grouped by primary, secondary, and tertiary prevention approaches.

## PRIMARY PREVENTION RESEARCH

Examination of the published literature reveals a paucity of research in the area of primary prevention of alcohol abuse and alcoholism among American Indians. This may be due in part to the fact that many Indian children begin experimenting with AODs before the sixth grade, so that primary prevention activities would have to be undertaken in preschool or the early elementary grades (Mail 1995). Exceptions to this pattern occur in topical areas, such as injury prevention (IHS 1990; Smith 1991) and fetal alcohol syndrome (FAS) prevention (May and Hymbaugh 1989; Plaisier 1989; Masis and May 1991), where good baseline, epidemiologic data provide the possibility for long-term followup of program impact.

Because relatively few Indian women drink, and fewer drink to excess or during pregnancy, one would

think that little effort would be expended in efforts to intervene. But FAS is a totally preventable birth defect, so many Indian communities have mounted major efforts to encourage women in their childbearing years not to drink, or to stop drinking during pregnancy. Screening during prenatal clinics, as well as other points of contact with community women such as the Women's, Infants' and Children's Program (WIC) and pediatric clinics, are good places to identify women in need of referral and counseling (activities that fall under tertiary interventions). Because the prevention message is so clear, a variety of community education programs are directed at younger women, their friends and family, and the larger community, encouraging abstinence before and during pregnancy (May and Hymbaugh 1989; Plaisier 1989; Rowe 1997).

The majority of primary prevention reports for Indian communities contain mostly models for proposed programs, rather than reports of research outcomes. These yield several valuable insights about hypothesized, as well as tested, components of successful prevention initiatives. Key among the necessary components recommended are (a) the need for communities to develop and feel a sense of ownership of their programs (Beauvais and LaBoueff 1985; Mail and Wright 1989; Petoskey et al. 1998) and (b) the need to address community-wide, structural issues such as unemployment and underemployment, leadership and role models, and peer and family norms that create an atmos-

phere in which drinking is socially approved (Maynard and Twiss 1970; Beauvais 1992; Mitchell and Beals 1997). Some authors recommend a broader-based approach, such as developing programs that take into account developmental stages in children and focus on prevention of emotional problems, which might then lead to AOD misuse (Berlin 1982).

A variety of strategies for intervention through alcohol control policies and laws have been tried for the past 165 years; these have proved to be largely unsuccessful, and in some cases even counterproductive (Oetting and Beauvais 1989). The most promising policy changes are those that have come from the Indian people themselves, at the grass-roots level (May 1992), such as banning alcohol advertising and sales at pow-wows and other social gatherings, denying admittance to these events to individuals who are attempting to bring alcohol in or who are already intoxicated (May and Moran 1995), improving employee screening and referrals, rewarding informants reporting community drug dealing, and enforcing Housing and Urban Development (HUD) housing policies (Rowe 1997).

An effective primary prevention model, similar to that used in public health approaches designed to reduce mortality in such areas as heart disease and motor vehicle crashes, would necessarily have to be community based, multifaceted, and comprehensive. The Center for Substance Abuse Prevention has promoted community-based prevention approaches through its Community Partnership grants. The

complexity and interrelationship of various community activities and tribal bodies are nicely illustrated in this program evaluation (Rowe 1997). From a research standpoint, outcome measures would have to include an appropriate baseline of pre-intervention data, a rigorous design including the use of control communities, and good followup data. In many cases alternative research designs such as delayed intervention and innovative outcome measures would have to be used to adequately meet the needs of the communities in question and to measure change.

## SECONDARY PREVENTION RESEARCH

For Indian communities, secondary prevention efforts are designed to identify and stop the problem in its earliest stages. These efforts include large-scale epidemiologic surveys and both community-based and school-based AOD prevention programs. Defining secondary prevention as beginning when Indian youth begin experiences with AODs, rather than waiting until more regular use and problems appear, may be counter to the prevailing professional perceptions. However, because Indian youth are considered to be at such high risk for alcohol misuse at early ages, we define primary prevention as pre-use and secondary prevention as beginning with first use. Primary prevention, for Indian youth, addresses skills and knowledge in not beginning experimentation and use; secondary prevention acknowledges experimen-

tation and use but seeks to delay heavier use and associated problems around AOD use.

A survey of adolescent attitudes about FAS prevention (Ma et al. 1998) revealed that 52 percent of American Indian students in the sixth through eighth grades already have begun experimentation or regular drinking. Ma and colleagues also found that there were few prevention programs in middle school, and that the most influential factor in determining attitudes and decisions about alcohol use came from the immediate family. Levy (1987) cautioned that negative labeling influences health behaviors and perceptions and can contribute to abusive drinking or suicide attempts. He noted that once individuals are labeled as deviant, other members of the social group will behave in a manner considered appropriate to the labeled person's new role, which, in turn, reinforces his or her behavior. The effects of negative labeling can be particularly significant for Indian youth living in tightly knit communities, where news of their initial experimentation and AOD use often spreads rapidly.

In the area of epidemiology, a number of researchers have conducted theoretically and methodologically sound work that provides an ample foundation for planning and developing effective prevention programs. These studies, in addition to documenting important quantity, frequency, and lifetime prevalence data, provide valuable insight into AOD-related mores, expectancies, and behavioral patterns among Indian

youth (Sellers and Winfree 1990; Swaim et al. 1993). Vulnerability to AOD abuse is associated with having poor family and peer group attachments, weak religious ties, poor academic performance, and vague goals. Resiliency, on the other hand, is associated with strong family attachments, absence of abusive drinking in the home, and positive school and cultural affiliations (Thurman et al. 1995).

In developing interventions to counteract risk behaviors, biculturalism is seen as a significant strength for Indian youth. Mason (1995) found that self-concept among American Indian adolescents was primarily culturally oriented, with a positive culturally oriented self-concept being negatively correlated with AOD use. In fact, low self-esteem and other negative emotional states were not correlated with alcohol abuse directly, but many authors cite these as underlying factors in risk-taking behavior (see chapter 9 in this monograph).

On the other hand, Petoskey and colleagues (1998) reported that attendance at cultural events was positively correlated with marijuana and cigarette use for both sexes, and with alcohol use among males. Boys in her study who rated the importance of Indian identity as high were also more likely to use marijuana. Mail (1996) found that for youth in some southwestern tribes, traditional orientation, instead of being protective, was highly correlated with participation in problem behaviors (i.e., defined as ever been drunk, high on marijuana in last week, high on inhalants or glue in last week, ever been arrested, and having

sex that resulted in pregnancy). She suggested that for some youth, AOD use may be one way to deal with the dissonance between traditional tribal expectations and the expectations of a more global adolescent culture (see also chapter 8 in this monograph). In a similar vein, Bates, Beauvais, and Trimble (1997) reported that peer associations were the most significant predictors of alcohol involvement for both boys and girls, while family sanctions against alcohol use were predictive only for girls. They concluded that ethnic identity did not predict alcohol involvement, directly or indirectly, for Indian boys and girls.

After surveying the Indian adolescent literature, O'Neill and Mitchell (1996) found that there was no clear model of adolescent alcohol use that takes culture into account, and that this was an important factor to include in future research designs. What seems abundantly clear is that there are no definite answers yet about the role of identity, culture, and self-perception in Indian youth AOD use.

To augment the programs designed for individuals, an additional set of interventions has been developed to involve the community in prevention efforts. Many of these partnership and collaborative projects have been supported by the Center for Substance Abuse Prevention (Johnson 1989), such as the ones described for the Jicarilla Apache reservation (Francisco 1995), the Red Cliff Band of Chippewa (Petoskey et al. 1998), and the S'Klallam Nation in the Pacific Northwest (Rowe 1997). Other collaborative school- and community-based pro-



grams have been supported by private foundation funding, such as the Kaiser Foundation 5-year health promotion demonstration program in a Plains Indian community (Cheadle et al. 1995). Unfortunately, few of these projects have an evaluation component developed along with the interventions, so it is difficult to determine the actual outcomes of these demonstrations. On the Jicarilla Apache reservation, Francisco (1995) noted that when key leaders were no longer available to the project, the momentum and planning for prevention appeared to cease.

Programs that do conduct evaluations can identify both quantitative and qualitative results from their efforts. Petoskey and colleagues (1998) reported that their school-based intervention resulted in increased social bonding, increased family actions to get help, and improved relations with the school system. Rowe (1997), who followed community activities throughout the 5-year funding of the Pacific Northwest Target Community Partnership Project, found that partnerships between tribal departments, professional services staff, and community members resulted in (a) implementation of training and education, (b) promotion of community-wide drug-free cultural events, (c) enhancement of child welfare and youth services, and (d) institution of new tribal policies and procedures directed at prohibiting or restricting AOD use and abuse. This community-based, community-involving approach resulted in increased individual knowledge, awareness, and

perception of the harmfulness of AODs, changed norms about AOD use, increased referrals to treatment, increased numbers of families receiving services, and decreased negative social conditions (Rowe 1997).

Table 1 presents an overview of published secondary prevention studies conducted with American Indian youth. Although the authors may see these as primary prevention studies, many of the Indian youth participants had already been using alcohol or other drugs, some for several years. In effect, many of the studies perceived as primary prevention are actually secondary interventions.

#### WHAT WORKS?

Findings from the studies listed in table 1 indicate that certain prevention approaches appear to be more effective with Indian youth. These approaches include bicultural competence skills training (LaFromboise and Rowe 1983) and strategies for affecting risk perception and creating community-level change, either by community action or by beginning with students and then involving tribal leaders and other adults. Another emerging strategy is an environmental, moderation-oriented approach, in which risk behaviors are reduced over time. These approaches are sometimes identified as *harm reduction* interventions (White 1982; Landau 1996; Daisy et al. 1998). Harm reduction approaches incorporate social events and cultural resiliency activities, as well as policy interventions and environmental modifications for the protection of using

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Table 1. Published Primary and Secondary Prevention Studies.

Study	Description	Subjects
Lefley 1982	Cultural intervention to build self-esteem, survival skills	34 Miccosukee and 38 Seminole children
White 1982	Urban Indian youth prevention project, Baltimore, MD	32 Ss (16 boys), ages 14-21
Carpenter et al. 1985	Peer-managed self-control drinking program; residential high school; intertribal group	30 Ss, random assignment to one of three interventions
Bernstein and Woodall 1987	Emergency room-based program for 7th graders in NM	17 exp/16 control Ss; random assignment
Gilchrist et al. 1987	Skills enhancement training, Pacific NW tribes	102 Ss; random assignment
Royce 1988	Cultural wellness education for 4th-6th graders in MN, WI, and MI	1,013 Ss (53% American Indian, 50% female); quasi-experimental
Schinke et al. 1988	Bicultural competence skills training, survival skills; Pacific NW youth	137 Ss; random assignment to exp/control
Scott and Myers 1988	Fitness training program for Quebec Natives	76 Ss; complete assessments for only 16 treatment and 20 comparison Ss
Davis et al. 1989	Community-organized, school-based adolescent health program; three SW tribes	78% of Ss at site 1 (53% boys, 47% girls); 53% of Ss at site 2 (43% boys, 57% girls)

Measures	Followup Interval	Major Findings
Pre- and posttest; personal self-concept; word-rating scale; preference for Indian stimuli; behavior rating form; social desirability	10 weeks after intervention	No change in self-esteem, but increased self-evaluation and preference for Indian stimuli; personal self-concept higher in Native-speaking youth than in English-speaking youth.
Q/F self-report; knowledge and attitude test; risk reduction intentions; pre- and posttest	10 weeks	Knowledge and self-worth increased; reports of drinking increased; intent to drink and drive changed.
Q/F self-report corroborated by breath tests and official records; knowledge, attitude tests; self-esteem measured	4, 9, 12 months	All groups significantly decreased quantity of weekly drinking over time.
Knowledge, attitude, behavior survey, especially drink and drive	8 months	Exp Ss perceived drink and drive to be more risky than control Ss.
Q/F self-report; self-esteem, drug knowledge and attitudes survey; interpersonal behavior test; pre- and posttest	6 months	Improvement in knowledge and skills to manage peer pressure and decrease in use of alcohol, marijuana, and inhalants.
Q/F self-report; self-esteem; decision-making skills, beliefs, and attitudes	9 months	Ss with full implementation reported higher self-esteem scores and lower rates of alcohol use.
Q/F self-report; knowledge test; attitude scale; interactive behavior scale	6 months	Ss in bicultural group improved more in attitude, knowledge, and skills and had lower self-reported rates of ATOD use than controls.
Q/F self-report; knowledge, attitude test; problem-solving skills; self-concept	24 weeks	Exp improved in fitness self-efficacy, ATOD use increased more among comparison Ss than treatment Ss.
User surveys, interviews	NA	NA

*Continued*

Table 1. *Continued*

Study	Description	Subjects
Duryca and Matzek 1990	ATOD peer pressure resistance skills training as a part of a larger cardiovascular education project	24 Navajo, 17 Pueblo Ss in grade 5 in two schools
Parker et al. 1991	Indian culture-based program; Project CHARLIE curriculum; urban NE Indian youth	9 exp/25 control Ss
Baldwin et al. 1996	School- and community-based interventions focusing on knowledge and practice of prevention skills, development of new peer group norms for HIV/AIDS and AOD prevention	Two 7th/8th grade, four 9th grade, two 10th grade health/physical education classes in northern Arizona schools
Nelson et al. 1996	School, individual, peer, family, and community domains; storytelling used to enhance cultural identity and foster resilience factors	86 exp Ss: students ages 12-14, average age 12.8 (52% male, 48% female)/32 control Ss: students ages 11-15, average age 12.6 (43% male, 57% female)
Navarro et al. 1997	Intervention based in Native spirituality	35 Ss in Indian community college
Rowe 1997	Community-based prevention program in Pacific NW	N = 92 survey respondents; sober adults increased 25% (1992) to 40% (1996)
Petoskey et al. 1998	School-based curriculum and community curriculum administered by trained teachers and community leaders in five communities in WI and MN	1,937 students (50% boys; 50% girls): 736 in grades 4 and 5, 697 in grades 6-8, and 504 in high school; 74% American Indian. Year 1: 82 exp/ 169 control; year 2: 75 exp/ 162 control; year 3: 80 exp/70 control

Measures	Followup Interval	Major Findings
12- and 24-item multiple choice questionnaire; pre- and posttest	1 week	No statistically significant difference in demonstrated ability to learn resistance skills, recognize peer and social pressures.
Q/F self-report; self-esteem survey; cultural affiliation; ethnography	2 months	Greater reduction in drug use among program participants than nonparticipants; significant negative correlation between cultural affiliation and alcohol use.
Pre- and posttest, American Drug and Alcohol Survey, and NAPPASA Health Behavior Questionnaire, ethnographic methodology	14 sessions (no interval time specified)	NA
Q/F self-report; prevention planning survey; draw-a-person test; cultural affiliation survey; role model survey; problem-solving test	6 months	Exp Ss showed significant increase in problem-solving skills, perceived harm of drug use, and self-concept. High curriculum dosage was negatively correlated with alcohol and other drug use.
Reading, student discussion and projects, and participation in ceremonies	NA	Ss recognized that using alcohol and other drugs contradicts traditional tribal values.
Activity log; policy changes; pre-post surveys among adults and youth; annual police record reviews; key informant interviews	2 years and 4.5 years into project; evaluations following each major activity	Increased community perception of harmfulness of ATOD use; parental disapproval of youth alcohol use increased from 57% (1992) to 69% (1996). Increases in friends disapproving of drinking (36% vs. 22%) and friends not expecting drinking (38% vs. 14%).
Survey incorporating items from Monitoring the Future, National Household Survey, and Primary Prevention Awareness, Attitudes and Usage Scales; self-report data	Data collected over 3 years	Attendance at cultural events was positively correlated with marijuana and cigarette use and, for boys, with alcohol use. Girls who rated Indian identity highly were less likely to use alcohol. Participants in the intervention showed less use of marijuana and alcohol than controls.

*Continued*

Table 1. *Continued*

Study	Description	Subjects
Van Stelle et al. 1998	High-risk youth community-based program on Lac du Flambeau Reservation; cultural enhancement of family systems	133 families with 217 adults; 227 youth, ages 4-17
Moran 1999	14-week, 2-hour-session after-school program, administered at six sites	Grades 4-7; <i>N</i> = 71 Indian youth (39% boys; 61% girls) and 30 comparison youth (67% boys)

Note: Review does not include fetal alcohol syndrome interventions or injury prevention program reports. ATOD = alcohol, tobacco, and other drug(s); exp = experimental; NA = outcome data were not available or not reported at the time of the publication; NAPPASA = Native American Prevention Project against AIDS and Substance Abuse; NE = Northeast; NW = Northwest; Q/F = quantity and frequency of alcohol intake assessment, usually self-report; Ss = subjects (students, if intervention was school based); SW = Southwest.

and inebriated individuals. One example of policy as harm reduction can be found in a study of tribal beverage control policies and alcohol-related mortality. The findings of this study were suggestive rather than conclusive, but there was an association in tribes with comprehensive alcohol legislation and lower alcohol-related mortality rates (Landen 1997). This association echoes findings by May two decades earlier that tribes that legalized alcohol on their reservations had lower arrest and mortality rates after legalization (May 1976). Finally, comprehensive health promotion and life skills programs including physical activity and "survival skills" curricula have demonstrated some success at reducing use and increasing awareness (Schinke et al. 1988) and continue to

be popular interventions in many communities.

The wilderness experience or survival skills programs are often combined with an emphasis on cultural recovery to help young people learn more about their history, heritage, values, and culture. This is the basic approach used by community-based programs that are not reported in the research literature. For example, in the Pacific Northwest and British Columbia, several of the Coast Salish tribes are restoring the tradition of long-distance canoe travel. These canoe clubs have strong elements of wilderness experience and cultural recovery activities (Connie McCloud [Puyallup Tribal Health Authority cultural resource coordinator, Tacoma, WA], personal communication, June 1998.) To participate, community

Measures	Followup Interval	Major Findings
"Process evaluation," no details on measures; outcomes reported descriptively	24-week programs delivered over 5 years; followup on each family cohort completing program; intervals unspecified	Positive effect on self-esteem and self-identity described, but no clear measures of outcome cited.
Prc- and posttest on Locus of Control, Children's Depression Inventory, Piers-Harris Children's Self-Concept Scale, and Alcohol Beliefs Scale	Posttest immediately following 14-week intervention	Depression decreased more for the comparison group; no other differences between the intervention and comparison groups.

youth must not be using alcohol or other drugs. Throughout the year the youth train to increase endurance and strength, while also learning about the traditions, crafts, and culture of the Coast Salish peoples. In the summer, they join youth from the United States and Canada in marathon paddling, sometimes traveling over 1,000 miles in a 2-week period. There is great pride in being a member of the canoe activities, and in several tribes there is a waiting list for places in the project. This activity, however, has not been evaluated, so its perceived success is yet another anecdotal report. In the published research, Lefley (1982) and Schinke and colleagues (1988) provided examples of survival skills combined with cultural teaching as primary prevention activities for Indian community youth.

Interventions that involve very young children are rarely reported in the literature. An exception to this is Lefley's (1982) reporting on a series of interventions that took place with the Miccosukee and Seminole tribes of Florida. The interventions were designed to test the hypothesis that promotion of environmental and socialization practices that produce feelings of self-worth in children is basic to primary prevention approaches. The Miccosukee Cultural Program was designed to prevent cultural erosion, provide structured continuity, and raise self-esteem among schoolchildren in grades 1 through 6 ( $n = 34$ ). The cultural intervention included 2-day overnight camping trips and 1-2 hours per day of discussion at school. A control group was identified from a school on the Big Cypress Seminole Reservation ( $n = 38$ ). A posttest

was administered 10 weeks after the intervention. No significant change in self-esteem was found, but the Miccosukee children did show significant increase in self-evaluation (e.g., reduced difference between actual and ideal self) and increased preference for Indian stimuli.

A second study with this same population examined differences in personal self-concept between Native-speaking and English-speaking children. The Native speakers showed significantly higher scores in personal self-concept, while the English speakers scored higher in Indian self-concept (i.e., a more generic perspective than self). Lefley (1982) proposed that this difference may reflect a high degree of role conflict and suggested that one source of defensiveness exhibited by Indian children may be related to guilt about Indian role fulfillment rather than a sense of personal inadequacy. Some role conflict about being Indian may be transmitted by the mothers of Indian children, who also demonstrated lower self-esteem in communities with higher acculturative disintegration (e.g., loss of traditional culture and language). Lower self-esteem in older children may reflect greater exposure to Indian-non-Indian discrepancies and increased psychological distance from the family. Youth react to their lack of power and responsibility within their own tribal systems by turning to AOD use, because it helps change reality. Lefley (1982) reported that Indian boys appeared to be more vulnerable than did Indian girls.

There are some common features in the reported studies. First, the time frame for assessment of outcome is typically short, ranging from 1 week after the intervention (Duryea and Matzek 1990) to 12 months after the intervention (Carpenter et al. 1985). Second, data from adolescents are usually collected through self-report questionnaires (Lefley 1982; White 1982; Carpenter et al. 1985; Bernstein and Woodall 1987; Gilchrist et al. 1987; Schinke et al. 1988; Scott and Myers 1988; Duryea and Matzek 1990). The use of such questionnaires is believed to be a valid way to collect sensitive data (Midanik 1982; Malvin and Moskowitz 1983; Sobell and Sobell 1990). To ensure the validity of what is being reported, however, especially among Indian populations, some researchers recommend using multiple methods of data collection when possible (Walker and Kivlahan 1984; Schinke and Cole 1995a).

Another common feature of many reported interventions is a lack of a control or comparison group (e.g., White 1982). The lack of a comparison group may be an artifact of the intervention, but it is more likely to result from the community's expectation that no child be left out of potentially positive activities or instruction. When researchers approach Indian communities to propose exploration of problems and application of potentially helpful interventions, the idea of a control or non-intervention group is highly objectionable to Indian people. If something has the potential of being helpful, community leaders want assurance that all candidate indi-



viduals receive the "treatment" or intervention. This expectation of universal inclusion poses major challenges to research design and results in time-series designs or open enrollment activities that can accommodate drop-in participants.

Another major research challenge is the time it takes to explain to all community leaders what the research is for, how it will operate, how data will be collected and protected, and what will remain for the benefit of the community. Most interventions suffer from the "single application" syndrome, in which the program is designed and administered, data are collected, and the researcher moves on to another funded project. Experienced prevention researchers recommend that community-based interventions be used, with methods that provide information, training, and other services to a wide range of community members (e.g., teachers, family members, tribal administrators) so that these individuals become collaborators in the research project. Increasingly, Indian communities show antipathy for becoming involved in interventions in which they had no input, that are to be applied over a limited span of time and leave nothing behind after the project is completed. Successful interventions need to become a part of the community (Bobo 1985; Bobo et al. 1985; Carpenter et al. 1985; Rolf 1995; Rowe 1997).

In summary, the majority of interventions reported from Indian communities appear to suffer from small sample sizes (see table 1), lack of comparison groups, poorly explained

interventions, interventions not sensitive to cultural context, and followup periods that do not allow sufficient time to determine if the intervention had any lasting effect on AOD use behaviors.

Informal discussions with several researchers in this field yielded additional insights based on their experiences in conducting research or program reviews. Some of their suggestions have also been corroborated in the literature. Proposed approaches include using school counselors to plan activities involving the community in such areas as career education, traditional values, and AOD abuse prevention (Murphy and DeBlasie 1984); creating generalized wellness programs (such as a wilderness adventure program) that focus on community strengths, not weaknesses (Levy and Kunitz 1987); using culturally sensitive measurement procedures in addition to culturally sensitive prevention strategies (Schinke et al. 1989); providing and increasing vocational training (Kahn and Stephen 1981); and using longitudinal studies to track program effect in relation to natural cohort trends (Bernstein and Woodall 1987). It should be noted that many communities have an interest in developing training for the helping professions, and there is a strong interest in establishing and supporting community colleges on Indian reservations. The drawback is that few of these approaches have been rigorously evaluated. Also, what works successfully in one community may not be replicated in another, thus reducing the overall impact of promising interventions.

The more popular school-based curricula, including "Here's Looking at You Two," "BABES," and "Project Charlie," have been widely used in Indian communities (Mail and Palmer 1985 [see appendices]), but their impact and outcome have not been reported in the research literature. In cases where programs have been evaluated, the literature suggests that they have minimal impact on preventing the onset of drinking behavior (Green and Kelly 1991). This appears to be less a function of the curriculum than the setting. For example, a promising intervention developed at the Intermountain Indian School in the early 1980s had an abbreviated followup when the school was closed by the Bureau of Indian Affairs (Carpenter et al. 1985). In most of the school-based studies, followup is limited to posttest results or a 6-month evaluation, so longer term impacts cannot be determined (see table 1).

In cases where curricula have been revised for use in community settings, higher levels of success and greater effect on AOD use behavior have been reported (Parker 1990). Project Northland, directed primarily at non-Indian youth but containing Indian students in its subject pool, demonstrated the importance of establishing a multicomponent approach, including school-based and community-based activities. The community-based activities included reaching out to families of the students receiving the intervention and getting them involved in what the student was learning (Perry 1998). Additional studies of the effectiveness of school-based curricula,

especially in long-term followup of program participants, are clearly indicated.

The ethnographic research literature is another source of prevention insights. This literature includes information on the cultural context of drinking, with attendant implications for prevention strategies. In particular, insight may be gained about cultural norms for drinking and nondrinking behaviors by individuals within communities. Such research also explores alcohol use expectancies, culturally accepted corollary behaviors, and how community norms shape acceptable quantity, frequency, and beverage of choice decisions for community drinkers. As Bobo (1985) noted, decision making and effective communications skills are inseparable from personal and cultural values, so attempts to influence alcohol use decision-making processes must take place within the context of an individual's family, friends, community, and the broader historical and cultural context of his or her cognitive environment. Ethnographic studies remind us that alcohol-related pathology and the very concept of alcohol abuse are culturally defined. In this vein, many anthropologists have made important contributions to alcohol treatment research, including identification of a cultural model of dependency and recovery (Watts and Gutierrez 1997), identification of culturally based elements such as the sweat lodge (Hall 1985), and systematic observations of indigenous healing practices (Weibel-Orlando 1989). Ethnographic research methodology also can be used to provide outcome data for prevention

programs, as will be discussed in more detail in the last section of this chapter.

## **TERTIARY PREVENTION RESEARCH**

Tertiary prevention is held to apply when the problem under investigation (e.g., alcohol abuse, alcohol dependency, alcoholism, other drug misuse, and associated comorbid conditions) is already present in an individual. The goal of tertiary prevention is to halt the progress of the illness or condition, to restore health or function, and to prevent further deterioration. Tertiary interventions are commonly identified in the literature as "treatment." However, included in tertiary interventions would be clinical screening programs designed for early identification of individuals in trouble, with the purpose of making appropriate referrals for help. The literature provides several examples of such clinical screening, mostly for women of childbearing age, designed to prevent FAS. Identification of women who are pregnant and drinking should result in referral to a counseling or treatment program (Gale et al. 1998; Kvi-gne et al. 1998; Li et al. 1999).

Similar opportunities for tertiary prevention are described in studies of motor vehicle crashes. For example, a study from New Mexico on motor vehicle crashes and fatalities showed that the majority of pregnant Indian women (77 percent) killed in crashes involving alcohol were not wearing their seat belts. The authors strongly recommended increased education on the dangers of alcohol use and riding

with intoxicated drivers and the importance of using seat belts (Schiff et al. 1997). Other studies of motor vehicle crash injury risk and mortality have shown that Indian drivers were more likely to be intoxicated, that Indian passengers were more likely to ride with intoxicated drivers, and that Indians, compared with non-Indians, were less likely to be restrained at the time of the crash (Oken et al. 1995; Chang et al. 1996; Grossman et al. 1997), strengthening the argument for more driver safety and driving-while-intoxicated education in Indian communities.

Because Mail and Shelton cover findings from treatment programs in chapter 7, they will not receive additional attention in this chapter. However, it is important to note that the majority of tertiary studies have encountered similar methodological difficulties to those identified in the area of secondary prevention; that is, lack of controlled trials, small number of subjects, and short followup periods. Based on a comprehensive review of available data, May and Moran (1995) observed that programs at all levels of prevention could benefit by addressing issues of culture and fostering enhanced affiliation with both Indian and Western institutions—academic, economic, and social.

## **RESEARCH CONSIDERATIONS AND RECOMMENDATIONS FOR PREVENTIVE PROGRAM IMPLEMENTATION**

The paucity of research published in "mainstream" academic journals is

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likely due to two major factors. First, the mandate to design interventions that appeal to minority group members, avoid potential value conflict, acknowledge drug use norms, and reduce ethnic distrust poses a formidable challenge (Bobo 1985). Second, failure to write up findings is due to the oft-acknowledged difficulty of running a successful program and simultaneously conducting the rigorous research and analysis required by peer-reviewed journals.

Indian communities typically are far more interested in service programs that address youth needs and provide treatment for alcohol abusers than they are in conducting research about these interventions. In addition, there is increasing scrutiny and authority claimed by tribal councils, who (appropriately) reserve the right to review and challenge research assumptions, methodology, and even research staff. Several tribes have adopted culturally sensitive human subjects review criteria and, in order to conduct research with Indian people in both reservation and urban settings, researchers must receive the approval of one or more Indian committees. This is a time-consuming process, and one that many researchers may lack the patience or resources to overcome. Once research is completed, tribes want to review all material proposed for publication, and this also increases the publishing time lag. These last factors should be perceived as positive, because tribal review ensures that Indian tribes and organizations will exercise a measure of control over the use of data collected

within their communities. In addition, the expertise of community members and tribal staff as they increase their familiarity with research is a valuable by-product of the research oversight.

One solution to the dilemma of service provision and data gathering is to promote increased collaboration between university programs (anthropology, medicine, psychology, sociology, etc.) and tribal or urban service providers. When this is successful, it is often because the tribe or urban Indian program has sought out the collaboration with university researchers.

The research literature contains many recommendations and suggestions for introducing and conducting AOD use prevention research and programs in Indian communities. The following key recommendations and suggestions are based on published findings, observations of the author, and discussions with other researchers.

- Comprehensive community-based primary prevention studies based on successful public health models need to be implemented and rigorously evaluated. These studies should incorporate successful components of earlier studies, including such elements as bicultural skills training, cultural resiliency activities, and a community action approach.
- Preventive interventions should have longer followup periods, especially when interventions are conducted with youth below the age of onset for AOD use or those in the high risk-taking period of their lives.
- Prevention studies should be community-based if possible, or at least

contain a community-based component. Studies have shown repeatedly that school-based programs alone are not powerful enough agents of change to impact expectations, behavioral norms, family context, and other factors that encourage drinking after school and on the weekends (Schinke and Cole 1995*b*). Community members should be trained to develop, maintain, administer, and evaluate their own programs. Unless community members feel a sense of ownership of a particular program, it will never thrive or continue past the research period.

- Older adolescents (age 15 and above) should be involved in prevention programs as program assistants, role models, and mentors for younger children. Unless a program can successfully capture the interest of older adolescents, it will probably not be successful in affecting community norms and behavior patterns. Documented strategies for involving adolescents have included forming teen advisory groups, hiring teens to work on the project, and using teens as peer counselors or to do service learning projects (Hall 1992).
- Although the involvement of older adolescents is critical to the success of prevention programs, these programs also benefit from involving the entire community. Most Native communities function on an extended family basis, and studies that focus on young people alone, without addressing the need to change norms, patterns of behavior,

or socialization factors, will probably fail. However, young people can become a catalyst to draw the entire community into a prevention initiative, as elders become teachers, parents get involved as participants or spectators in children's activities, youth become program assistants or peer counselors, and so on. This model can be successfully implemented in both urban and rural settings, with both reservation and nonreservation youth.

- Researchers must be willing to make a number of protocol accommodations to match the special needs and circumstances of Native populations. For example, there is a need to move beyond clinical models, such as random sampling or controlled trials, to models such as delayed intervention, repeated measures, and switching replications, all of which will be more acceptable in Indian country. These types of designs will be increasingly called for as tribal councils assume the responsibility of serving as their own institutional review boards.
- Researchers should consider the development of innovative outcome measures for each study. Potential outcome measures for youth might include days of school missed, behavioral problems at school, and emergency room or clinic visits, along with culturally sensitive measures of AOD-related knowledge, attitudes, and behavior. For older adolescents and adults, it is possible to develop an index of untoward events. This index would include

incidents related to motor vehicles, including driving under the influence, vehicular crashes, and auto-pedestrian mishaps. Community indicators might also include police reports of arrests or response to domestic violence calls. Finally, emergency room visits are a general indicator of the prevalence of alcohol's effect on the community (especially when blood alcohol levels are determined at the time of admission).

- One approach to utilizing innovative outcome measures may be to gather ethnographic data (Baldwin et al. 1996; Rowe 1997). Ethnographic data can be particularly useful when tribal members deliberately choose to hide incidents from outsiders to protect community members, and tribal police are reluctant to allow this information into formal police records. These actions can contribute to an under-reporting of such potential outcome indicators as traffic incidents or domestic disputes. For example, I learned of a collision between a single automobile and a train in which the driver of the car was extremely intoxicated at the time of the crash. Tribal members arriving on the scene removed all beer cans and other incriminating evidence before police arrived. Because the driver was severely injured, no blood alcohol level was recorded, and the incident was officially reported as a traffic accident with no mention of the involvement of alcohol. On another reservation, intoxicated drivers returning to

their homes will often run their cars into the drainage ditches found along both sides of the road leading to the reservation. Tribal members with heavy-duty trucks are adept at pulling these cars out of the ditches before local law enforcement can arrive at the scene. However, it is most likely that the entire tribal community will know about the event by the next morning. Thus, a trusted researcher may be able to collect ethnographic and anecdotal data on drinking and driving from knowledgeable community members. These data provide one type of baseline for the prevalence of alcohol misuse in a community and provide indicators about where appropriate interventions might be initiated.

- Use of anthropological methods in documenting these events is helped by the close-knit nature of American Indian communities. It is very difficult in these communities to hide individual involvement with alcohol or other drugs from tribal members. For example, insiders will recognize cars parked outside of bars and be able to tell who is inside, or will pass a drinking party and be able to tell who is present. Leland (1975), in her work with a Nevada Indian colony, had community members define the different types of drinkers within the community and then rate those drinkers into two categories: those who could and those who could not "handle" alcohol. Similarly, community residents will be able to

provide data on "untoward incidents" such as traffic crashes, fights, assaults, unintended injuries, children who have been left home alone, and other AOD-related events that do not require emergency room care and that never get into official police, court, or hospital records. These data sources are no less rigorous, despite being unconventional. Judiciously used, such information can provide both important data about the extent of a problem and corroborating data about the effect of a prevention program in that same community.

- Similarly, opportunities for routine screening and referral should be developed and implemented throughout primary care clinical programs, and school faculty should be trained to screen and refer children at risk, to provide additional corroborative data sources.
- One can make a strong case for the benefits to resource-poor communities in participating in joint research endeavors that involve a coordination of funding sources. Combining research and service awards would allow communities to support more comprehensive programs in both schools and the community. These comprehensive programs could include multiple elements, such as directed exercise programs, nutrition counseling and dietary supplements, life skills training, AOD abuse education, and decision-making and coping skills instruction. The major problem here is that most research-dedicated funding (i.e., the National Institutes of Health variety) does not allow for extensive service-based programming, and programs funded for service demonstration (i.e., the Substance Abuse and Mental Health Services Administration variety) usually do not support a major research component as a part of the grant. Community leaders in many minority communities, including Indian communities, can only hope that some collaborative, hybrid type of funding that will allow multiple goals to be met over 5–10 years will eventually be available (Stubben 1995; Thurman et al. 1995).
- Programs should allow relaxing or mixing of ages among the participants. Children are a cherished part of life in Native communities, and attempts to exclude even the youngest children from participation in activities may result in hostility against the program and withdrawal of participants. In a very real sense, any community-based intervention will touch all age groups because the entire community will be influenced by the intervention, so research should be designed for multigenerational interventions.
- Alternative settings for program delivery should be identified, instead of relying solely on IHS facilities or school buildings. Locating the program in these sites can deter youth participation, because young people naturally associate these sites with "should's" rather than "want to's."

- Programs should work to foster and enhance resiliency (Mail 1996). This concept is increasingly being recommended as a basic component of Indian prevention programs. One component of resiliency that is gaining favor in intervention programs is training in bicultural competency. Recent drug abuse prevention studies show that culturally sensitive approaches are important. Individuals working in Indian communities are also becoming increasingly aware of the importance of preparing young people, and even young adults in recovery programs, to live comfortably in both the Indian and non-Indian worlds (i.e., biculturalism). The resulting reduction of stress may help prevent relapse as well as delay onset of alcohol, tobacco, and other drug misuse.
- If possible, programs should contain a holistic health and wellness message in addition to a focused alcohol-use prevention message. There is often a fine line between AOD abuse and other high-risk behaviors in these populations. Many of the protective factors can potentially affect a continuum of risk behaviors. For example, a discussion of the risks of alcohol misuse with adolescent Indian girls may lead readily into a discussion of the dangers of unprotected sex, including HIV infection, other sexually transmitted diseases, and unplanned pregnancies. A non-judgmental approach is also more consistent with traditional holistic worldviews.
- It is important to work toward making projects self-sustaining after the research funding ends. This is difficult but not impossible to accomplish, especially for tribally sponsored programs in communities with unencumbered revenue resources, such as those being derived from Indian gaming. It is also possible that a program may contain revenue-generating elements. The issue of program continuation is often not even broached until well into the funding period, at which time it may be too late to explore alternatives. Research funding limits both service delivery capability and time available for the intervention. All too often Indian communities will undertake a project, do the work of implementing and operating it, only to run out of funding just when positive outcomes are being identified and people have learned to administer the intervention effectively. In addition, funding for long-term prospective research and service programs appears to be increasingly scarce or nonexistent.
- A frequently overlooked research component is that prevention programs should be fun, as well as practical and educational. Mail's description of American Indian children "playing drunk" underscores the concept that children need creative games and fun activities to replace the activities represented by drinking (Mail 1995).
- Prevention programs need to include practical skills training. Research suggests that enhanced Indian identity must be accompa-



nied by skills needed to survive in the non-Indian world (Mail 1996; Schinke et al. 1997). In one of the programs with which I am familiar, a successful strategy used by the schools involved opening a computer lab for free evening sessions in word processing, surfing the Internet, and development of computer-related skills. Such skills training provides important alternatives to youth who might otherwise seek out more problematic or deviant use of their time.

- When cultural components are included as part of the resiliency construct, the components should be sufficiently defined to ensure comparability for outcome evaluation purposes. For example, it is possible to divide cultural components into six categories: (1) material culture, (2) performance culture, (3) symbolic culture, (4) governance, (5) subsistence strategies, and (6) language or linguistic affiliations. These groupings then allow each tribe or community to customize activities that are appropriate to their population.
- Researchers should also develop mutually agreeable standards for assessment instruments, particularly with regard to the cultural components. There are many variations of cultural assessment scales; without agreement of the field, however, studies that use these instruments will continue to be subject to concerns of reliability, validity, and replicability of research findings with other populations. Indeed, several researchers have developed cultural orientation or cultural identity scales to measure the degree to which community members identify with their culture of origin or the Euro-American culture (Uecker et al. 1980; Walker et al. 1981; May 1982; Westermeyer and Neider 1986; Oetting and Beauvais 1990/91; Mail 1996; Walker et al. 1996). These scales include several of the categories mentioned in the preceding suggestion, and they provide a basis for intertribal comparisons. However, the construct of culture is a subjectively perceived and experienced phenomenon, and any attempts to quantify it will be rudimentary at best. Yet the importance of identity with a culture or subculture is critical to self-development, self-esteem, and social maturation (Lefley 1982; Olsen and Baffi 1982; White 1982; Sweet 1988/89; Parker 1990; Mason 1995; Trimble 1995; Mail 1996). The degree to which the individual identifies with his or her culture and acts out its norms is often critical to the success of behavioral intervention strategies (Navarro et al. 1997).
- To implement a successful program, researchers must be trained to understand and work with tribal and community leaders. There is a unique protocol and policymaking system within Native communities (Parker and Langley 1993; Beauvais 1999), and programs will not succeed or thrive unless researchers are able to identify the true leaders within a community. This entails working with both traditional leaders and elected officials and recog-

nizing the decision-makers within each segment of the community.

- Qualitative research should also be conducted on areas where existing data are largely anecdotal. For example, the natural history of spontaneous remission or "maturing out" (Levy and Kunitz 1974; Hill 1980; Kunitz and Levy 1994) may contain important implications for prevention, and the concept of community readiness for change (Oetting et al. 1995) also merits further investigation.
- Sharing information and disseminating research findings to practitioners must become a priority. This may be accomplished through teleconferences, clearinghouses, and Internet sites to expedite knowledge transfer, as well as through face-to-face exchange among Indian professionals and others working in tribal communities. One new dissemination method is publishing journals electronically. The journal *American Indian and Alaska Native Mental Health Research* is now available online, beginning with volume 8, number 2 (<http://www.uchsc.edu/sm/nciaianmhr/jover1.htm>); it is one of the first Indian publications to use this new medium. As with the entire research process, local people should also be involved in disseminating information (Beauvais and Trimble 1992).

In closing, two things must happen for prevention programs in Indian communities to be successful. First, the alcohol research world must truly

adopt an "insider's view" of Native communities, which requires a real commitment to bridging a deeply entrenched gap between two worlds. Second, communities must be willing to commit to the structural and programmatic changes needed to create long-term positive outcomes for future generations. When both of these events come about, the promise of seeing a significant reduction in AOD abuse and related problems plaguing Indians today may be realized.

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## Chapter 7

# Treating Indian Alcoholics

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*KEY WORDS: Native American; community-based treatment; cultural sensitivity; spirituality and religion in treatment; culturally sensitive prevention approach; treatment outcome; cultural expectations on drunken comportment; treatment research; cultural identity*

History documents the misuse of alcohol by American Indian people shortly after European contact. Europeans introduced alcohol to Indians, initially as a gift, and later as an item of commercial exchange. The best documented introductions describe activity related to the fur trade (Robinson 1918; Chittenden 1935/1954; Jacobs 1950; Berreman 1956; Saum 1965; Jacobs 1967; Bryde 1971; Wax 1971), but Indians were able to obtain liquor in a variety of ways other than trading (bootlegging being one of the primary sources after trade was prohibited [Chapman 1915; Benge 1960; Bearss 1968; Lawrence 1972]). The behavior of Indians when intoxicated resulted in the colonial

and later the Federal Government passing laws prohibiting the sale to and possession of liquor by Indians (*Laws of the Colonial and State Governments Relating to Indians and Indian Affairs* 1832; Eddy 1887; Chapman 1915; Frederikson 1932; Wissler 1940; Lindquist 1944; Clark 1965; Cohen and Mause 1968). Indian leaders and their supporters appealed to Congress to pass laws protecting tribal people from the liquor traffic (Thunder 1880; Indian Rights Association 1904; McBeth and Crawford 1914), but no legislation was successful in interrupting the supply of liquor to the Indians. Later, when Indian people were confined to reservations, bootleggers appeared to

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provide alcohol to meet market demands (Meritt 1914; Chapman 1915; Bengé 1960; Young 1961; Stands-In-Timber and Liberty 1967).

Although the misuse of alcohol was reported by traders (Van Valkenburgh 1937; Merk 1968), Indian agents (Meritt 1914, 1915; Kneale 1950), and missionaries (Smith 1862; O'Meara 1933; Belmont 1951; Kelbert and Hale 1954; Lemert 1954*b*; Dailey 1968), there is little in the literature discussing attempts to intervene beyond uneven enforcement of existing liquor laws and the efforts of the missionaries. Following the repeal of prohibition of liquor sales to Indians in 1954, some tribes obtained licenses and began to sell liquor themselves (May 1977; May and Smith 1988). By the 1960s, Indian tribes, working with the Indian Health Service (IHS) and other governmental and non-governmental agencies, began to design programs to provide treatment for alcohol dependency and addiction. This activity was greatly accelerated when the University of Utah's Western Region Indian Alcoholism Training Center (WRIATC) received the first grant to train Indian alcohol counselors (Edwards 1976).

Two events occurred that allowed tribes to initiate a focus on the treatment of Indian alcoholics. The first was the passage of Public Law (P.L.) 88-452, the Economic Opportunity Act of 1964. This legislation established the Office of Economic Opportunity (OEO) and created Community Action Programs (CAPs) for economically distressed communities. The

funding included Indian reservations. The OEO initiatives have been cited as having some of the most profound impacts on tribal communities of any Federal legislation. The CAPs funding initiated a variety of projects from preschools through vocational training, agricultural extension, and housing (Officer 1971). Tribal governments also made the decision to direct a part of this funding to create alcoholism treatment programs (Moss et al. 1968).

The second significant legislative act, P.L. 91-616, the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act of 1970, created the National Institute on Alcohol Abuse and Alcoholism (NIAAA). One of the mandates to NIAAA was to conduct research and provide for the support of prevention and treatment programs for those special populations recognized to have severe drinking problems (Chafetz 1973). These two pieces of legislation laid the foundation for the great increase in secondary and tertiary interventions for alcohol and other drug (AOD) misuse in Indian communities. NIAAA both supported and expanded service programs on Indian reservations until the passage of P.L. 94-437, the Indian Health Care Improvement Act of 1976. This act laid the foundation for the eventual transfer of all Indian treatment and prevention programs to the IHS, the Federal agency charged with responsibility for the comprehensive health care of all Indian peoples, both rural and urban. (Title V of P.L. 94-437 was the first official recognition that there were Indians in urban commu-

nities who required services equivalent to those available to Indians on reservations [Prucha 1990]).

This chapter describes the development of treatment interventions by programs serving Indian people and the increasing influence of Indian cultural content in establishing and managing tribal or urban Indian treatment programs. Early treatment programs were found in revitalization movements, especially those originating with charismatic leaders who experienced near-death events and received a message of social responsibility, including temperance (Wallace 1966, 1970). These interventions were followed by Alcoholics Anonymous (AA) and/or counseling and the use of Antabuse (Szuter et al. 1965; Ferguson 1970; Rattray 1970). Although some Indians achieved sobriety through these programs, there was an increasing call for more culturally sensitive programs. With the transfer of Indian alcohol programs from NIAAA to the IHS, the opportunity for tribes to manage their own programs and to incorporate traditional healing practices increased. We first discuss the nature of the early programs and then discuss the development of training for Indian counselors and spread of more culturally congenial programs. Special note is made of apparently successful treatment interventions drawn from traditional cultures (Jellinek 1960; Westermeyer 1972) and the unique experiment represented by the Alkali Lake Band of British Columbia (Guillory et al. 1988; Rhoades et al. 1988). The chapter concludes with a discussion of

research needed to improve treatment and demonstrate the efficacy of traditional components in treatment.

## STRUCTURED RELIGIOUS APPROACHES

Evidence for Indian and non-Indian interest in identifying positive interventions in the harmful consequences of alcohol misuse can be found in the social sciences literature from the 1930s forward. Interventions advocated by scholars and other observers can be categorized as falling into three major approaches: (1) participation in various messianic or religious movements, including the Native American Church and following the Peyote Road; (2) participation in preserved cultural ceremonies and rituals, or contemporary adaptations of these ceremonies; and (3) participation in culture-congenial or syncretic treatment modalities that incorporate elements from indigenous and conventional treatment approaches.

One of the earliest reported approaches to assisting problem drinkers and alcoholics was affiliation with the Native American Church. Although interest has largely focused on the role of peyote in the ceremonies of this church, it is adherence to the proscriptions and beliefs of the church that provided support for recovery and sobriety. The Native American Church eschews the use of alcohol, promotes family responsibility, and provides a strong sense of Indian identity. Various researchers have reported on the value of the Native American Church and peyote ceremonies over time (table 1).

NIAAA IHS AA

**Table 1.** Observations on Peyote as an Indigenous Healing Strategy.

Peyote Focus	Tribe(s)/Region	Source
Use of peyote in connection with alcohol is considered hygienically if not ethically unwise, and many observers maintain that use of peyote may cure alcoholism.	Plains Indians	La Barre 1938/1969
The Native American Church provided an alternative to alcohol abuse.	Southern Ute	Stewart 1941
The Native American Church helps individuals to achieve and maintain sobriety.	Southwest	Underhill 1957
The anti-alcohol position of the Native American Church is a significant source of support for former drinkers.	Navajo	Aberle 1966
The peyote cult provides an alternative to drinking, but is seen as another escape mechanism for collective community repression.	Pueblo	Siegel 1967
Peyote offers possible solutions to alcohol abuse, especially where alcohol had been used as an adjunct to the vision quest.	Kiowa-Apache	Freeman 1968
The Native American Church discourages drinking, and many Indians view the Church as a solution to alcoholism.	Sioux	Feraca 1969
Among Indians who once drank heavily but have stopped, all belonged to the peyote cult.	Cree and Saulteaux, Canada	Roy et al. 1970
Peyotists have greater success in intervening in problem drinking than other agency programs on the reservation.	Navajo	Bergman 1971
The peyote ritual of the Native American Church is a better antidote to alcohol than anything missionaries, the AMA, the PHS or the white man has come up with.	All using tribes	Menninger 1971
Temperance is an important tenet of the peyote religion.	Plains	Hertzberg 1971

Table 1. *Continued*

Peyote Focus	Tribe(s)/Region	Source
There appears to be a strong correlation between peyote use and sobriety that should be further investigated.	Saskatchewan	Roy 1973
Participation in the Native American Church is an important component of treatment for alcoholics.	Southern Cheyenne and Arapaho	Albaugh and Anderson 1974
The peyote religion has rehabilitative effects on alcoholics.	Navajo	Wagner 1975
The spiritual support found in the Native American Church is analogous to that of AA.	Arapaho	Pascarosa and Futterman 1976
The use of liquor and tobacco was prohibited, and the Peyotist was expected to be legally married, remain faithful to his spouse, and work regularly.	Winnebago	Hill 1985
AA programs are useful in reaching sobriety, especially when sanctioned by the Native American Church.	No tribe or region cited	Moss et al. 1985

Note: AA = Alcoholics Anonymous; AMA = American Medical Association; PHS = U.S. Public Health Service.

In addition to the Native American Church, there have been other regional or culturally specific interventions that were used to help alcoholics. One of the most interesting is the Spirit Quest of the Canadian and Puget Sound Coast Salish (identified earlier by Lemert [1954a] as the Winter Ceremony) (Jilek 1974a, 1974b, 1982). In the Spirit Quest, the primary theme is death and rebirth, with the emphasis on returning to life free of AODs (Jilek 1974b). Preparation for and participation in the ritual cycle takes 6 months, and participants must be abstinent throughout the cycle.

This ensures detoxification and a long period without alcohol, so that even an individual who returns to drinking has experienced an enforced period of healing by virtue of his participation.

Although participation in this ceremonial cycle has been documented as effective in helping Indians overcome alcohol dependency, despite its clear traditional roots, treatment programs do not advocate it. The lack of advocacy for participation in the Spirit Quest may lie in the fact that the leadership for the ceremony comes from spiritual leaders and not clinicians, and therefore it cannot be as carefully con-

trolled. In addition, the ceremonial cycle requires a community with strong commitment to and knowledge of the tradition. Finally, for the participants, total abstinence is required only during the 6 months of the ceremonial cycle, meaning that they could return to drinking or other drug use during the summer. This contradicts a fundamental philosophy of Indian alcohol programs, that one must forever abstain from AOD use to be in recovery or cured. Nevertheless, the Spirit Quest/Winter Ceremony continues to be observed and should be viewed as an alternative therapeutic regimen, especially in those communities for whom this observance is a part of their culture. Participation could be distinct from the conventional alcoholism program regimen but considered as a complementary and supporting activity.

The Indian Shaker Church (no relationship to the American Shaker Church found in the Eastern United States) is a messianic, intertribal religion, founded in the Pacific Northwest more than a century ago (Fitzpatrick 1968). Among the services the church provides are assistance to problem drinkers, healing ceremonies, and support for recovering alcoholics. The Indian Shaker Church was established on June 7, 1892, at the Mud Bay home of Louis Yowaluch in Thurston County, Washington. The church came into being as a result of John Slocum's death-and-rebirth experience. In this visionary and ecstatic state, an angel reportedly told Slocum that he had been "a pretty bad Indian" (Ruby and Brown 1996).

The vision, a blend of Protestant rhetoric, Catholic symbolism, and Indian beliefs, was then promulgated through the teachings of Slocum and his wife, Mary Thompson (Squaxin Indians of Washington), between 1880 and 1886. Barnett (1957) attributed Slocum's death-and-rebirth experience to a combination of factors, including acculturative stress, social problems, economic duress, religious upheaval, the introduction of liquor, and the rapid expansion of European settlers in the Pacific Northwest. Adherents to the Indian Shaker Church can be found today throughout the Pacific Northwest, Columbia Plateau (in Washington State), and British Columbia.

The origin of the Indian Shaker Church is consistent with Wallace's concept of revitalization movements, a cyclical indigenous response to disorganization and acculturative change.

Revitalization theory recognizes the integrative power of religious experience for the distraught and disillusioned individual in search of salvation. Myth and ritual provide positive models of maturation and spiritual renewal. The process of spiritual rebirth of the individual prophetic dreamer or convert can be regarded as a healthy, therapeutic experience. (Wallace 1966, p.36)

In many cases, the Indian prophet is an individual who had experienced serious problems with alcohol, and his or her revitalization includes a strong

goal of abstinence. The revitalization movement eventually becomes institutionalized, stabilizing its novel way of life, and produces, in effect, a new conservatism (Slagle and Weibel-Orlando 1986).

Slagle and Weibel-Orlando (1986) drew parallels between the revitalization phenomena represented by the Indian Shaker Church and the creation of the AA movement. Both movements had leaders (Mary and Bill Slocum in 1892 and Bill W. in 1934) who had a belief in a power source beyond themselves and a sense of mission that changed the focus of their lives. It is postulated that the Slocums were reacting to the increasing acculturative pressures and the introduction of alcohol into the Pacific Northwest. Both movements had charismatic or cult figures as leaders, and both leaders promised deliverance from alcohol abuse through faith in a higher power. Both movements are codified through written documents.

The personal conversion experience is consecrated through repetitive ritual performance in which individuals publicly commit themselves to membership in an association organized around the principle of temperance or sobriety. Slagle and Weibel-Orlando (1986) identified the consecration process as occurring in three stages: a "meditative" stage in which the petitioner commends his fears, faults, and troubles to God (Steps One, Two, Three, Six, Seven, and Eleven of AA's Twelve Steps); a "sanctification" stage accomplished through public testimony or confession (Steps Four, Five, Eight, and Ten in AA); and a "glorifi-

cation" stage in which one gives praise and is baptized and reborn in sacred fire (comparable to Steps Nine and Twelve of AA). The Twelfth Step of AA is to "carry the message" to other alcoholics (AA 1976), just as the newly committed Shaker is expected to help heal others who seek faith and a vision. Additionally, both AA and the Shaker meetings have quasi-obligatory, preceremonial socializing periods that serve to renew or reinforce social bonds and provide continuity for the group. This always involves a sharing of food. Although the Shaker Church incorporates Christian elements, especially ringing a bell blessed over a candle flame three times, and the formulaic intonation, "In the name of the Father, the Son, and the Holy Ghost" (Slagle and Weibel-Orlando 1986, p. 314), it is perceived as being a very traditional Indian cultural activity.

The Shakers believe that alcohol has taken over and is a threat to the lives of not only problem drinkers but also their families and community. They believe alcoholism can be the product of sorcery or demonic activity and thus is amenable to "cure" by a shake. The Shakers make a strong connection between sickness and sin, and the area of health is one in which the church figures prominently (Amoss 1980). The shaking of the body and quivering of objects in the room where the "shake" occurs are all a part of the Indian Shaker healing ritual. Ruby and Brown (1996) believe that the "shaking" may be related to beliefs about spirit possession, and that the bell ringing that accompanied

healing may have been a substitution for the earlier traditional pounding sticks and shaking rattles. One ritual of the church is "diagnosis" by "seeing colors" or "auras" (Slagle and Weibel-Orlando 1986). Such diagnostic acumen through ritual trance, hand trembling, divination, and psychic readings has been characteristic of shamanistic curing throughout Native North America (Driver 1970), so the diagnostic ability of Indian Shakers is consistent with the nativistic qualities of this curing ceremony (Slagle and Weibel-Orlando 1986). Other revitalized rituals and ceremonies are also increasingly being used as a means of ameliorating the negative effects of alcohol in Indian communities.

Table 2 summarizes the Shaker movement and other indigenous therapeutic interventions that have been used successfully in alcohol intervention and recovery. Several early leaders, such as the Seneca Handsome Lake and the Shawnee Prophet Tenskwatwa (Wallace 1970), placed a major emphasis on abstinence and denounced drinking as evil and destructive. In addition to the temperance focus, all of these messianic movements also emphasize responsibility to family and community, helping their members to reassume positive roles in their communities.

Although these structured religious approaches are accepted by treatment programs as appropriate for some individuals, no State or federally funded treatment programs have their primary focus in traditional or religious ceremony. Most programs would allow and even encourage clients to participate in ceremonies and other

Indian events, especially when many have anecdotal success in helping individuals achieve and maintain sobriety. But the fact remains that the actual effectiveness of these adjunctive "therapeutic" modalities has not been evaluated. In fact, there would probably be considerable resistance to any formal evaluation of spiritual practices. Evidence for their efficacy is obtained through interviews with recovering individuals who cite the influence of church or ceremony in helping them to recover and redirect their lives. But anecdotal evidence is insufficient information for the assurance of success or as a guide to replication. There are too many variables unaccounted for, and the "cure" may be unique to only a few people. Unless the therapeutic approach is quantified in some fashion by recording condition on entry, length of treatment, type of treatment, and desired and defined outcomes, it would be hard to know what parts of the ceremonial or religious intervention were the "active ingredients" in the therapy, let alone how to replicate the therapy in other settings. In addition, the cultural specificity of some of the religious observances might well be inappropriate if performed by other cultures that did not follow these traditions or beliefs.

### COMMUNITY-BASED CONTEMPORARY TREATMENT APPROACHES

The first community-based Indian alcohol treatment programs, other than the faith-based interventions, were those funded through the OEO.



Table 2. Indigenous Therapeutic Interventions.

Intervention	Key Observation(s)	Source
Indian Shaker Church / Winter Ceremony	Northwest Coast Indian alcoholics get positive support for abstinence from the Shaker Church and the Winter Ceremony.	Lemert 1954 <i>a</i>
Indian Shaker Church	Indian Shaker ritual has psychotherapeutic elements that help problem drinkers on the Yakima.	Fitzpatrick 1968
Indian Shaker Church	Compares elements of the Shaker Church with Alcoholics Anonymous.	Slagle and Weibel-Orlando 1986
Spirit Quest (same as Winter Ceremony cited by Lemert 1954 <i>a</i> )	Indian alcohol abusers benefit more from indigenous therapeutic procedures along with participation in rituals such as the Winter Ceremony.	Jilek 1974 <i>a</i> , 1974 <i>b</i> , 1982
Handsome Lake Movement	This messianic Iroquoian movement places major negative sanctions on alcohol consumption.	Wallace 1970
Sun Dance	This Plains ritual, revived and followed by young men, requires abstinence and spiritual preparation. It is a voluntary activity outside standard treatment.	Jorgensen 1972
Gourd Clans	These socioreligious groups for men with well-defined social relationships require abstinence before and during the ceremonial observances.	Albaugh 1973
Sweat lodge	This is widely used in alcohol programs as an adjunct to other therapies for purification and reidentification as Indian.	Worden 1980; Guilmet 1984; Hall 1985; Ben 1991
Midewinin Medicine Society	Teachings of the Society are used as the basis of a therapeutic regimen. Operates mainly in the Ojibwa language with translation into English. Most effective with sniffers. Has four phases: detoxification, purification, healing, and unification.	Dumont 1989; Brady 1995

The OEO also supported the first Indian counselor training program at the University of Utah (Moss et al. 1968). These programs, established in the late 1960s, relied largely on bringing AA onto the reservations. They also served to initiate a dialog with the IHS clinical staff about the need for medical intervention on behalf of the more seriously ill alcoholics.

At the Fort Defiance Indian Hospital on the Navajo Reservation, IHS staff worked with tribal outreach personnel to test the efficacy of disulfiram (Antabuse) administration (Savard 1968). And in Gallup, New Mexico, an experimental program to treat frequently incarcerated Indian alcoholics with counseling and disulfiram was initiated (Ferguson 1970). Both of these programs, in Gallup and at the Fort Defiance hospital, demonstrated the value of pharmacotherapeutic support in recovery. However, clinical staff also noted that continued group support and cultural acceptance of the treatment method were important for success. In the case of the Navajo, it was usual and accustomed medical practice to take "medicine" from practitioners, so the daily disulfiram dose fell within culturally acceptable treatment patterns. Many Indians who had belonged to drinking groups also reported that by making it known they were "on the pill," they were not pressured into engaging in further drinking. The problem remained, however, that their primary social outlet was still their drinking friends.

The use of disulfiram in the treatment of Indian alcoholics was tried at one time or another by many pro-

grams, but its success varied. Its obvious action in helping to deter drinking generated considerable initial enthusiasm, but support for its use waned when it did not produce long-term results or acceptance by Indian communities (Shore and Von Fumetti 1972). However, it continued to be used by some programs as adjunctive to other forms of aftercare (Kline and Roberts 1973).

The proper use of disulfiram requires medical evaluation and monitoring. This created some conflicts between tribal programs and the IHS clinical staff. The early Indian alcoholism treatment programs developed independently of the IHS. This was a source of tension between the alcohol program staff (the majority of whom tended to be paraprofessionals in recovery) and the clinical professionals of the IHS (who often tended to discount the experience, knowledge, and suggestions of the Indian alcohol program staff). Indian alcohol program directors (E.J. Turner and Vic Werner, personal communications, 1975) reported that, in their perception, the NIAAA Indian Desk had provided funding for their initial programs without many requirements for reporting, management, or structure of therapeutic approaches. Several of the program directors were concerned that the pending transfer of NIAAA-funded Indian programs to the IHS would dilute their authority over the programs and bring about increased oversight from Washington-based project officers or program administrators unfamiliar with reservation-based program administration and

patient access issues. These directors petitioned Congress not to transfer the NIAAA-supported programs to the IHS and expressed their concerns regarding loss of control, increased professional direction of largely lay-managed programs, and the possibility of the alcohol programs being placed under the jurisdiction of the Division of Mental Health Services. This last concern was based on the historic experience of Indian counselors with mental health practitioners and a conviction that psychologists and psychiatrists had not been knowledgeable about alcoholism or helpful to individual Indian clients (Anonymous 1974). Some of these concerns appeared in the American Indian Policy Review Commission's *Report on Alcohol and Drug Abuse* (Snake et al. 1976), and adjustments made by the IHS are briefly noted in the 1985 *Briefing Book for the Alcoholism Program Review* (Mason et al. 1985).

Although alcohol programs were being established on reservations and were available to Indians relocating to urban centers, AA programs were not always successful. As Shore and Von Fumetti (1972) reported, "Indian drinkers have generally reacted by withdrawal when asked to participate in a racially integrated group in which 'confession' of one's drinking behavior is of major importance" (p. 1451). Nevertheless, the first cycle of treatment programs relied heavily on AA as a primary therapy. This occurred in part because the first training program (1970-75) for Indian counselors, the WRIATC at the University of Utah, emphasized AA as the principal social

treatment method (Moss 1971). The WRIATC trained 277 Indian counselors, and they, in turn, provided significant leadership in Indian communities for the development and expansion of Indian treatment programs (Moss et al. 1985). Seventy-three percent of the counselors trained were recovering alcoholics, and, of these, 68 percent rated AA as most helpful in achieving their sobriety (Moss et al. 1985). Thus, AA was emphasized in the early training materials and was the primary treatment approach in many early Indian alcoholism programs (Moss et al. 1968). Tribal alcoholism programs learned, however, that AA worked best if the group meetings avoided the "confession" of behavior (e.g., telling one's story) or discussion of intimate feelings. Rather, Indian AA came to emphasize education about alcohol, family adjustment, vocational rehabilitation, and involvement of youth (Shore and Von Fumetti 1972).

### THE INTRODUCTION OF CULTURAL ELEMENTS IN TREATMENT

From the beginning of the Indian alcoholism programs, there was an emphasis on identification with and adaptations of conventional treatment to Indian culture (Shore and Von Fumetti 1972). Materials prepared for the WRIATC trainees also raised issues around Indian culture, including a summary of cultural theories of causation (Moss 1970). Following the WRIATC training program, there were several other Indian counselor-

training programs established, such as the Northwest Indian Training Institute, serving all of the tribes in Oregon, Washington, and Idaho with headquarters in Salem, Oregon (Trimble 1977). Training programs have increasingly focused on emphasizing cultural elements, and some, such as the Four Worlds Program in Lethbridge, Alberta, Canada, are almost totally a multifaceted culturally based program (Bopp 1987; for information about the program, go to the Web site: <http://home.uleth.ca/~4worlds/>).

As noted earlier, the earliest approaches to treatment with clear cultural components came from the involvement of the Native American Church. This was followed by the growing recognition that while AA was helpful for some, incorporating cultural adaptations or "Indianizing" AA would be more acceptable in Indian communities (Price 1975; Jilek-Aall 1978; Stephens and Agar 1979; Jilek-Aall 1981). The Northwest Indian Training Institute developed a 12-step guide with an Indian cultural focus for use with alcoholism clients at the specific request of the Umatilla Alcohol Program (Weber 1976). More comprehensive adaptations of AA are found in the dissemination of two very Indianized approaches to AA: Sobriety Through the Sacred Pipe and the Indian Brotherhood (White Bison).

The Sacred Pipe adaptation originated among Indian inmates in prison in the Southwest and has as its core the Lakota Pipe Ceremony, coupled with a modified 12-step approach. The Indian Brotherhood approach was developed by a small nonprofit

corporation called White Bison, Inc. The Indian Brotherhood is more pan-Indian and less antagonistic toward modern Euro-American society. It is useful not only for individuals seeking recovery but also for communities trying to address their alcohol problems and other serious social issues. The creator of White Bison is a Mohican Indian from Wisconsin (Womack 1996).

A third example of this Western-adapted treatment approach is the Red Road, developed by Gene Thin Elk (Thin Elk 1993). The Red Road was formulated to address the cultural dissonance between Eurocentric society and Indian values and social systems. It is based on Lakota principles, incorporates "culture as therapy," and allegedly addresses the cognitive, affective, and experiential needs of Indians in treatment. However, the tools used in this approach are hard to find.

None of these Indian AA programs have been evaluated as to efficacy or effectiveness, nor have they been compared with the success of non-Indian AA programs.

Indianized AA programs seek to avoid any reference to a Christian "God," replacing this construct with the Great Spirit or the Creator, concepts more congenial to Indian communities. Womack (1996) suggested that the greatest distinction between standard AA and Indian AA is that Indian AA seeks to incorporate cultural elements from Indian traditions and beliefs, while standard AA becomes the culture in which the adherent is grounded. Standard AA is depicted as a journey of self-discovery, which may lead back to the alcoholic's

original faith or cultural origins. Indian AA, on the other hand, places an emphasis on regaining lost cultural values and identity. In many ways, although not actually stated, the assumptions behind Indian AA are very similar to those cultural theories that postulate anomie or cultural disruption as a main cause for alcohol misuse. The underlying thesis is that the original loss of culture and the cultural disruption occurring at the time of European contact and beyond play a role in the prevalence of alcohol misuse. The alienation and disruption theme appears in research conducted with a variety of cultures, such as the Alaskan Aleut (Berreman 1964), urban adolescents (Boatman 1968), and the Navajo (Levy and Kunitz 1971). Womack (1996) asked,

If cultural loss is not a factor in Indian alcoholism, then why do these culturally-focused alcohol treatment models exist and continue to grow in popularity? Culture loss may not be all of the problem, but Indians feel that regaining lost cultural strength, identity and pride must be a part of the solution. (pp. 84-85)

Duran and Duran (1995) maintained that AA is often forced on Indian clients and that even though AA employs references to the Creator, this "Creator" closely resembles the Christian way that is offensive to Indian clients. Duran and Duran proposed that a more culturally congenial approach for traditional people would

be to conceptualize alcohol as a spiritual entity that has been very destructive of the Indian way of life. They proposed that treatment be designed to incorporate ways to deal with spirits, based in traditional medicine and ceremony. This would include purification rituals and adoption of what they define as a "warrior stance" (Duran and Duran 1995, pp. 146-148). This assertive, traditional treatment regimen takes a very different approach from the AA passive acceptance of "powerlessness" over alcohol.

Following the synthesis and incorporation of the Peyote Road and Indianized AA, Indian programs began to increasingly identify therapeutic elements in other religious ceremonies as well as the more broadly Indian-identified rituals such as the sweat lodge. For social activities, the sobriety powwow has become a major feature throughout Indian country. This is a social gathering for all ages, sometimes featuring a dance competition, with the mandate that no participant will use alcohol on the powwow grounds or attend intoxicated.

Although Indian practitioners originally condemned the Western therapeutic approaches as inappropriate for Indians, increasing experience with some adapted conventional therapies showed that they could be successfully used in Indian programs. Non-Indian practitioners believed that it would be ineffective to conduct group therapy with Indians who had little familiarity with English, but Wolman (1970), working with the Navajo, demonstrated that it was possible to conduct effective group therapy using the

indigenous language with English added. Manson, Walker, and Kivlahan (1987) described the increasing use of group therapy with Indians and deemed it especially appropriate for alcoholism treatment programs.

Several authors have noted that determining the level of acculturation is important before placing individuals in group therapy situations, because the more Indian oriented an individual is, the less comfort he or she may have with a "talking therapy" or group discussions (French 1980; Trimble and Fleming 1989; Abbott 1998). Waldram and Wong (1995) reported that more traditional Indians find themselves at a distinct disadvantage in large therapeutic or "talking" groups with mixed Indian and non-Indian participants. For the Indian client who is not assertive, speaks poor English, and is unfamiliar with the dominant Western or Euro-based cultural expectations, participation in a group is a frustrating experience. Bicultural Indians manage better in the groups and can be appropriately assertive, although they are more aware of the discrimination and racism expressed in the groups. The most acculturated participants appear to handle the group process the best (Waldram and Wong 1995). Success in the group depends, in large measure, on how well the participants accept the group norms.

To make Euro-American group process more acceptable to Indian participants, perceptive program staff developed a more traditional approach to group process. This is now generally known as the Talking Circle

(Stone 1981*b*; Manson et al. 1987). Although non-Indian clinicians and some Indian professionals count the Talking Circle as a form of therapy, for many Indian people, the Talking Circle is a spiritual practice. They do not believe that it should be viewed or treated as a form of group therapy.

In the Talking Circle, the group is usually opened with prayer and smudging.<sup>1</sup> An elder or medicine man often opens the circle, although in residential treatment, it can be a senior counselor. The rules for the circle are reviewed, and it is agreed that the circle will be open or closed. In closed circles, nothing that is said in the circle leaves the circle. There is a sacred object, usually an eagle feather or talking stick, which is passed from participant to participant. Only the holder of the object may speak, and no one is allowed to comment on or discuss what is heard. In this way, the very personal sharing by the individual is protected. When everyone has spoken, the circle is closed with prayer. Participants in talking circles find them to be empowering experiences, capable of evoking great feelings and a depth of communication not permitted in one's daily life. Very personal things are shared in the circle, but they are rarely discussed after-

<sup>1</sup> Smudging is the practice of slowly burning sage, cedar or sweet grass, or other culturally appropriate material, in a container and passing it through the circle, allowing the participants to engage the smoke and thus carry away evil from each person before the circle begins. Many participants wave the smoke toward their face and shoulders with hand motions, directing it over their heads in a "splashing motion" to cleanse themselves.

ward unless the participant initiates followup with a counselor.

Perhaps the most ubiquitous pan-Indian therapy found today is the sweat lodge. This practice appears throughout virtually all of the Indian treatment programs as well as in many prisons with significant Indian populations. In 1982-83, Hall surveyed a random sample of the 190 IHS-supported alcohol treatment programs to assess the prevalence of sweating and its use as a therapeutic modality (Hall 1985). She found that no program made sweating mandatory, but 65 percent of multitribal and 26 percent of single-tribe programs highly recommended it to clients. The sweat lodge was found in equal frequencies in all of the six regions surveyed, missing in only the three Eastern programs sampled. Hall (1985) classified the sweat lodge phenomenon as a type of reformatory Native movement with emphasis on a return to spiritual concepts of the pre-European past and abstinence from alcohol. Other reformatory movements include the Indian Shaker Church and the recent return of the Sun Dance and spirit dancing. In each of these movements, control over alcohol is a major theme. But of all the movements, the sweat lodge "has become a concrete symbol for Indian persons concerned with practicing their traditional culture. Its simplicity and power have made it accessible and attractive to persons with minimal traditional experience as well as to groups composed of native persons with diverse tribal backgrounds" (Hall 1985, pp. 134-135). Several other researchers have noted

the use of the sweat lodge in treatment (Worden 1980; Guilmet 1984; Manson et al. 1987; Novins et al. 1996; Navarro et al. 1997).

Table 3 summarizes several cultural-congenial or syncretic interventions currently used in Indian communities.

### A CLASH OF TWO CULTURES: FEDERAL REQUIREMENTS AND TRIBAL PERSPECTIVES

A fact of Federal funding for any project or program is the requirement to report back to the funding agency. Indian alcohol treatment programs struggled with this requirement from their inception. Barriers to reporting might involve lack of familiarity with the English language, low levels of education among recovering alcoholics who were moving into counselor positions, and an antipathy to forms whose meaning was unclear. Yet reporting was a necessary element of program survival. The challenge was to develop reporting requirements that would have some meaning and acceptability in the variety of reservation and nonreservation Indian programs. In addition, it was recognized that the training of counselors in the Indian programs was uneven at best. The question arose as to whether a reporting system might also serve as a counselor guidance tool to ensure consistency in client services. One result was an innovative approach designed to both capture program service and outcome data and provide guidance to paraprofessional coun-

selors. It was called the Alcohol Treatment Guidance System (ATGS).

As a part of the Memorandum of Understanding developed between the IHS and NIAAA governing the transfer of programs, it was agreed that the alcoholism programs would

continue to use the National Alcohol Program Information System (NAPIS), a reporting system that was developed by NIAAA, until the IHS developed its own system. In 1978, the IHS brought together a working group of Indian program directors, representatives from

Table 3. Cultural-Congenial or Syncretic Interventions.

Intervention	Key Concept(s)	Source
Bilingual group therapy	Demonstrates that it is possible to conduct successful group therapy in both English and the Native language.	Wolman 1970
Indigenous practitioners	Recommend that Western treatment augmented with indigenous procedures in close cooperation with Native therapists is beneficial for alcoholics.	Jilek and Todd 1974
Plan therapy	Behavioral modification based on Navajo and Hopi perceptions of normative and deviant behavior; multidimensional patient evaluation and treatment are needed to address the cultural complexities behind alcoholism and comorbid disorders.	Topper 1976, 1985
Sweat lodge	Ceremonial cleansing as adjunct to treatment, widely disseminated throughout Indian alcohol programs. While not mandatory, it often is strongly recommended as an adjunct to other forms of therapy. Important for Indian identification.	Worden 1980; Guilmet 1984; Hall 1985; Manson et al. 1987; Ben 1991; Navarro et al. 1997; Abbott 1998
Indian Alcoholics Anonymous	Incorporation of indigenous and conventional alcoholism treatment strategies, such as Alcoholics Anonymous, with Native rituals.	Price 1975; Jilek-Aall 1981; Womack 1996
Self-Actualization and Conflict Resolution	A model for the identification of client types to better match client level of acculturation with counsel or orientation in treatment.	Weibel-Orlando 1987
Talking Circle	Culturally adapted group process.	Stone 1981; Manson et al. 1987; Ben 1991; Abbott 1998



local Indian treatment programs, and Federal staff to design the new reporting system. Recognizing that many Indian program staff lacked adequate training in counseling and treatment, the working group proposed a reporting system that would both collect data and serve as a framework for following the client through the treatment system, from pretreatment intake through treatment and into rehabilitation and aftercare. There was minimal writing required, and guidance was available throughout the system to ensure adequate client intake, assessment, referral and placement, treatment, discharge planning, and aftercare.

The Indian program directors monitored the development of the system to ensure that it would be culturally sensitive. Various forms, while reflecting the usual and customary Western therapeutic approaches to treatment, also included provisions to report the use of indigenous therapeutic interventions, such as sweating and consultation from traditional healers. A key component of the ATGS was the Client Status and Placement Scale. On this single form, it was possible to assess the client's stage of disease severity in terms of how his or her alcohol use was affecting physical health, emotional health, social/cultural health, and spiritual health. The concept of staging severity of alcoholism had been introduced by Jellinek (1960) and was based on behaviorally observable events, information that is historically available or gathered through interviews. The staging concept also has the advantage of quality assurance through a rational

problem-solving process applied to patient evaluation and treatment. This assessment, treatment planning, and treatment referral process was described by Weed (1969), who stressed the importance of followup as an integral part of treatment planning. Such client staging or assessment can be accomplished without the use of highly trained personnel.

Researchers and health planners in Alaska adapted Weed's proposals in the development of a client staging approach for use in Alaska Native treatment programs (Miller et al. 1974; Helmick et al. 1975, 1976). The stages they used included assessment of physical, social, and economic status of the clients and allowed that a client could move from one stage to another in either direction. Helmick, McClure, and Mitchell (1977) proposed that such a staging protocol could also be used to help evaluate risk for development of alcohol problems among Alaska Native students. But the major utilization of such a staging protocol was seen as helping estimate client progress in treatment, and this was recommended to the Alaska Native Health Board for use in their treatment programs (Miller et al. 1974, 1975*a*; Helmick et al. 1976). The recommended instrument for assessment and progressive treatment planning included (a) physical changes, including degree of intoxication and addiction, injuries due to intoxication, and pathological changes; (b) social changes, including family and nonfamily relationships; and (c) economic changes, including educational, vocational, and other activities (Miller et al. 1975*b*).

A panel of Indian alcohol program directors was convened as consultants to the guidance system development process. When they were asked to consider adopting the staging protocol as a part of the ATGS, the program directors insisted on the inclusion of a spiritual component. They insisted that there could be no recovery that did not include spiritual healing along with treatment for the mind and body, as well as repair of family and interpersonal relationships (Ernest Turner [director, Seattle Indian Health Board], personal communication, 1978). Although several non-Indian members of the working group felt this was inappropriate for a federally supported reporting system, in the end a staged spiritual component was included in the Client Status and Placement Scale (IHS 1980). This addition was the most culturally sensitive of the ATGS adaptations, but its inclusion was not universally accepted or appreciated among all the alcoholism programs.

Although the ATGS was a unique and innovative system that incorporated both data collection and counselor guidance, the manner of the system's introduction and subsequent staff training may have contributed to its ultimate failure. There were three major elements involved in the demise of the ATGS. The first was in the training protocols, in which emphasis in training was placed solely upon those portions of the ATGS that were to be submitted for computerization, neglecting the broader perspective of the system as a comprehensive guidance system. Because the training pro-

ocols failed to provide the logic behind the entire system and failed to emphasize the helping aspects of the ATGS, while insisting on accuracy in those forms forwarded to the IHS, counselors and other program staff felt increasingly burdened by a system they did not understand. Increasingly, alcoholism program staff perceived the ATGS as being overly complex and having little relevance for daily client services. Program staff reported that they were caught in an "expectation trap" that placed more emphasis on numbers than quality of care (Mail and Menter 1985). Staff trained in the entire system appeared to appreciate and use the ATGS more than those who did not get comprehensive training.

The second factor was a feature of the national evaluations conducted by the IHS in the early 1980s. In the evaluations, the alcoholism treatment programs got credit for writing a treatment plan (which could be found in a review of client records) (Charleston 1984). Client progress was assessed as positive if there was evidence that the client had "moved on" to a less intensive component of care from a more intensive one. This requirement to show movement may not have been the best fit for the Indian definition of successful treatment. Also, in retrospect, the negotiation of the treatment plan was a major weak point in the system, as the requirement to "do a plan" was a source of major discomfort for the paraprofessional counselors. One experienced program administrator suggested that a better course of

action would have been to work with the client in having him or her propose a "treatment path" leading to recovery. This approach would provide "ownership" of the plan by the client (Phyllis Eddy, personal communication, April 1999 [Ms. Eddy served as the alcohol program coordinator for the Nashville Area IHS and was a member of the evaluation teams in the 1980s]).

Finally, the rising tide of complaints that the reporting took time away from client services gradually recruited sympathetic bureaucrats among the ranks of the IHS area alcoholism coordinators. They, in turn, began to lobby the top program administrators to eliminate the ATGS and replace it with something less cumbersome, like the NAPIS. By 1988, the ATGS was no longer in use, and its rich data were never really used for the research or evaluation purposes envisioned when it was developed.

### **A COMMUNITY HEALS ITSELF: THE ALKALI LAKE BAND**

Shifting from the methods used to track and monitor treatment program success, we turn to examine one of the more unique events in the recent history of alcohol dependence treatment. This is the experience of the Alkali Lake Band of the Shuswap Indians of British Columbia, Canada. One woman, married to a community leader, allegedly initiated the community healing (Ben 1991). Although she herself was a heavy drinker, she managed to quit and began a move-

ment throughout the community to turn away from alcohol abuse and child neglect. Being the wife of the band chairman was a help in gaining community support. Gradually, more and more community members sought and obtained treatment and then returned to the community to swell the support for abstinence. The tribal leadership worked closely with the Royal Canadian Mounted Police to arrest community bootleggers (which included the elected Chief's mother), and asked a Catholic priest to leave the community because he was a heavy drinker (Ben 1991). Gradually, the community initiated support programs for band members, including employment, education scholarships, help with housing improvement, and expanded community economic enterprises (Chelsea 1982).

Phil Lane, a Seattle-based Canadian Indian filmmaker, documented this unique, multifaceted community approach to achieving sobriety. His film, *The Honour of All*, has been shown to indigenous people worldwide (Brady 1995) and has been used as a fundraiser for the community to further treatment and prevention activities.

Several factors appear to have contributed to this broad-based community commitment. Clearly, timing was critical, as was acknowledgment that the liquor supply had to be controlled. Commitment from both the elected leadership and traditional decision-makers had to be clear and public. Duran and Duran (1995) noted that the tribal leaders assumed their legitimate authority to govern by both

formal and informal means, ensuring support for the change. Because alcoholism interferes with so many activities of daily life, it was necessary to develop treatment programs that provided social, educational, and economic support. The men in the community used mostly AA and culturally congenial treatments, while women reported personal awareness and the support of other women as the most effective factors in achieving sobriety. The community children provided strong incentive for both men and women to stay sober. The sustained effort over 15 more years (1970-85) to bring about this community sobriety and redirection indicated long-term commitment on the part of increasing numbers of community members (Ben 1991).

Although most tribes in the United States applauded the Alkali Lake leadership and invited them to speak at numerous conferences and training programs, few Indian leaders appeared to believe that such comprehensive community commitment was possible in their communities. One issue that many tribal leaders raised was the difference in relations between governmental entities in Canada and the United States. Indians in the United States believed that the Canadian bands had less interference and more support from provincial and Federal Government than they felt they would get if they tried such a broad, community-based economic, educational, and medical intervention. U.S. tribes were also concerned about the high costs of such an intervention, accus-

tomed as they were to not initiating programs until the Congress or agencies of the Government made funds available (overlooking, perhaps, that the Alkali Lake Band mostly created their own opportunities for improved housing, education, and commerce).

Finally, as dramatic as the community recovery of the Alkali Lake Band is, there has been no rigorous description, exploration, or followup of the processes, techniques, or outcomes of this unique community achievement. A better understanding of the individual elements of this community-based recovery might yield valuable information for purposes of replication in other communities. In addition, there should be long-term followup to assess the stresses created not only by maintaining the recovery, but by the attendant notoriety and fame that affected key members of the community once the film was released and knowledge of this achievement became public among other alcohol-affected communities.

Although many communities did not feel they could duplicate the Alkali Lake success, alcohol misuse is so pervasive that only community-based interventions and community ownership of the problem may hold the keys to real alcohol misuse reduction. Berkowitz and colleagues (1998) have suggested that women can play a key role in shaping community-wide initiatives, but this also needs to be tested with appropriate research approaches. In the Alkali Lake community, it was the efforts of the entire community, men and women, that

ultimately changed the community from drunkenness to sobriety.

## **STRENGTHENING TREATMENT APPROACHES: LESSONS FROM EVALUATIONS**

Because there was so little information about the effectiveness of Indian treatment programs, the IHS Task Force on Alcoholism (1970) recommended conducting program evaluations. Congress, in language transferring the Indian alcohol programs from NIAAA to the IHS, mandated an evaluation. But national evaluation efforts of IHS programs did not begin until 1982.

Prior to the initiation of nationwide evaluations, there had been localized efforts to evaluate programs as early as 1972. The State of Alaska had been the testing ground for several evaluations conducted by the IHS, the Alaska Native Health Board (1973), and independent reviews under Alaska State contracts (Helmick et al. 1976; Altam Associates 1984). The Navajo Nation conducted internal evaluations on its programs, looking at both treatment services (Savard 1968; Ferguson 1970) and educational interventions (Navajo Health Authority 1978). Programs receiving funding from multiple sources often had to undergo multiple evaluations. For some, this may have had the effect of strengthening the program, while for others it was viewed as a major barrier to provision of client services. One example was the Seattle Indian Alcoholism Program, which

was evaluated by local government (Munz 1977), audited by the Portland Area Indian Health Service (Moore 1980), and later evaluated during national program evaluations.

First drafts of evaluation criteria were promulgated in 1978, with reviewers trained by the IHS. The early evaluations were mostly checklists, directing the evaluator to review program and client records in search of written administrative guidelines, an organization chart, records and minutes of official meetings, written personnel policies and job descriptions, clearly documented fiscal accountability, and evidence of written treatment plans and documented counseling sessions, as well as intake and discharge information (IHS 1978). At the end of the evaluation, the checklists were compiled to create an overall picture of program compliance, as well as to identify programs out of compliance and in need of technical assistance. Area alcohol program coordinators were provided individual program data in order to meet training and technical assistance needs, while the aggregated data were used in congressional budget hearings to support requests for additional funding. In fiscal year (FY) 1982, the review included elements of standards of compliance for alcohol treatment, with a section focusing on case management. The FY 1984 evaluation was more component-specific and included a review of client records and program logs. In addition, information was collected about staff training needs,

demographics, and community perspectives on the treatment program.

The use of evaluation data was inconsistent. Aggregated data were used to document additional program needs, while individual program data were returned to each IHS area jurisdiction for local decision-making and oversight. Despite evidence in the raw data of poor program compliance on one or more standards, and alcohol-program staff reporting use of alcohol (Mason et al. 1985), among other problems, no program was ever closed or had its funding withdrawn (Charleston et al. 1985; Mail and Menter 1985). IHS management recognized that, despite poor evaluations for very isolated rural and reservation programs, there were no alternatives to provide alcohol treatment services (Berg and Rummelt 1983). Technical assistance was provided to strengthen these programs rather than closing out-of-compliance programs. It is also necessary to keep in mind, in evaluating Indian treatment programs, that these programs represented employers in economically distressed areas of the country and on reservations with very high unemployment. This also contributed to the reluctance to close down any program.

To staff the first evaluations, IHS employees were assigned to review a specified number of programs. Initially, training for the evaluation was done regionally, so there was a perceived lack of consistency among the way different evaluators rated programs. Tribal administrators requested consistency in both evaluation instruments and processes so that they would

have a better idea of where their programs stood on a year-to-year basis. The more recent evaluations—women's treatment programs (Brindis et al. 1995) and adolescent treatment centers (IHS 1997)—have been contracted out. Some observers feel that this guarantees a more objective evaluation, although use of different contractors for separate pieces of the evaluation may reduce consistency of approach and compromise the overall validity of such evaluations. On the other hand, the outside evaluators often employ more rigorous methodology. The most recent evaluations have focused more on client services and outcomes than previous evaluations.

The major weaknesses found in Indian alcoholism programs lay in program administration, tracking client progress, and reporting client outcomes (Levy and Kunitz 1973; Stephens and Agar 1979; Novins et al. 1996). Strengths were cited in the area of client services (Raymond and Raymond 1984). In every evaluation, a major recommendation was the need for improvements in counselor training. The adolescent treatment evaluation recommended a standardized program approach and consistent methodology for screening and admission across the nine adolescent treatment centers. Additional mental health services were needed, as was improved continuity of care. A major need for posttreatment discharge planning and accommodation, such as halfway houses and aftercare programs, was noted (IHS 1997). Both adolescents and women reported a high prevalence of physical and sexual

abuse, suggesting the need for additional services and more professional training. In addition, the women's review team recommended that women's treatment programs use multiple approaches, including improved access, counseling for sexual abuse and domestic violence, and provisions for child care and transportation (Berkowitz et al. 1998). The recommendations accompanying the evaluation of women's treatment programs also emphasized the role of the community in identifying the female AOD user and supporting her recovery (Brindis et al. 1995).

More than 20 years ago, Stephens and Agar (1979) evaluated Indian drug treatment programs and noted that Federal funding mandates were often inconsistent with the Indian community need and perspectives. Despite the date of this report, many of their recommendations are still timely. They recommended that any Federal personnel handling Indian grants receive cross-cultural education. They also suggested that Indian groups need to be better informed about the need for research and helped to understand that research is an integral part of most federally funded demonstration projects, not merely a "technical addendum needed to obtain grant money." Related to the need to better understand and design research was the need for more trained Indian researchers. There was, and still is, a major need for more appropriate instruments and strategies for doing community and program research, such as using forms that allow for data

collection on extended families rather than the nuclear family. Stephens and Agar (1979) noted that survey research often did not work as well in reservation settings and suggested identifying other means of collecting data, such as the use of key informants. The need for more adequate accountability procedures in both program and fiscal matters was also cited.

In addition to recommendations for conducting research with Indian programs, Stephens and Agar (1979) also expressed their opinion that Federal agencies funding Indian treatment programs needed to be less rigid in their insistence about the distinctions in funding alcohol and other drug treatment programs. This would, in Stephens and Agar's estimation, allow more flexibility and responsiveness by Indian treatment programs, thus better adjusting to changing client preferences in substance use over time. Since their report was published, the Center for Substance Abuse Treatment in the Substance Abuse and Mental Health Services Administration has been established, providing demonstration funds that have this flexibility.

Stephens and Agar (1979) also noted that Federal administrators and program staff appeared to accept the subtle dominance of the medical model (e.g., alcoholism is a disease that may be treated in the same manner in different populations). The medical model approach facilitates a one-size-fits-all solution to the provision of treatment, and was, at least initially, less accommodating to cul-

turally complementary alternative treatments. Another way of viewing this is that State and Federal Government funding implicitly supported the position that programs for Indian people with alcohol problems should have the same cultural context (i.e., Western) as that of other alcohol treatment and rehabilitation programs (Stratton 1981). Although traditional medicine interventions may appear to help people recover, many Western-trained practitioners are leery of allowing traditional medicine to be practiced in the context of Western-supported treatment facilities (Stephens and Agar 1979).

AOD treatment programs are expected by Indian communities to address a wide range of community needs related to the provision of treatment services. For example, the community might expect that the program would provide transportation for clients and their families to and from treatment or for visiting purposes; help secure emergency aid to families when the breadwinner enters treatment; provide child care for women in treatment; provide or arrange for schooling for children accompanying women in treatment; coordinate community education and prevention services as an outgrowth of the treatment grant; and/or provide employment for community members. Even though all of these expectations fall outside narrow definitions of treatment center activities, it appears that providers of treatment services in Indian communities have recognized the need to respond to such expectations. Thus, the *Third Special Report to*

*the U.S. Congress on Alcohol and Health* (NIAAA 1978) observes: "Fortunately, flexible policies governing Indian alcohol programs have allowed many innovations in services to the problem drinker and those he affects (p. 22).

There are also concerns about length of stay in residential treatment. Non-Indian programs tend to limit clients to 28- or 30-day stays. However, with Indian clients, the use of alcohol may have begun at a younger age than that of non-Indian clients, and by the time an Indian reaches treatment, his illness severity may be quite advanced. Indian staff believe that longtime alcoholics require more than 30 days inpatient treatment and that a thorough detoxification is needed before any alcohol education or other rehabilitation can begin. Some programs have kept clients 60-90 days or longer (Weibel-Orlando 1984). For Indian adolescents in treatment, the mean length of stay reported among nine treatment centers ranged from 40 to 134 days (IHS 1997). Although there probably needs to be some flexible standard for length of stay in residential treatment, progress must be documented according to some agreed-upon benchmarks along the treatment continuum. Those patients who are deemed unable to gain any more from the program need to be discharged so that their beds are available for other clients (Novins et al. 1996).

Most Indian treatment programs, including urban and off-reservation programs, are required to be accredited by the Joint Commission on Accreditation of Healthcare Organiza-



tions (JCAHO), and most programs strongly encourage counselors to sit for state certification examinations. This has the benefit of assuring some consistency and quality of care in programs. The problem that remains, however, is that the standards for JCAHO and certification are based in Western approaches to treatment, leaving the counselors and programs with the problem of how to employ staff trained in traditional medicine and to incorporate traditional cultural approaches into treatment, while retaining their accreditation.

One thoughtful critique of the Indian alcohol treatment programs was Weibel-Orlando's (1984) characterization of treatment programs as "flawed rites of passage." In the rites of passage model, there is a transition across boundaries from one life status to another or from one phase of life to another. These transitions are usually marked by some ritual action that dramatizes the transition and helps the individual understand those processes and perceptions required of the new self. Weibel-Orlando (1984) describes these ritual acts as expressive, symbolic enactments of the transformations. In the transition, one separates from a former life status and undergoes an intense period of socialization preparatory to entering a new phase of life. Through a series of ritualized welcomes, the individual is then reincorporated into community life and takes up the trappings of a new, and usually, elevated role and status in his society. These three phases—separation, transition, and reincorporation—represent an ideal model, and

all are evident in the alcoholism recovery program process.

Unfortunately, the rites of passage model fails to provide a solution to the recidivism of the chronic alcoholic. For this individual, time spent in the treatment center is only one phase of a cyclical drinking career, and the passage through treatment is not for the purpose of cycling out of addiction, but is a means of perpetuating the chronic drinking lifestyle. As Weibel-Orlando (1984) and others (Spradley 1970; Wiseman 1970) have characterized it, entry into treatment provides a health-dictated hiatus in one's drinking career. The stay in recovery is only until the drinker is well enough to resume chronic drinking. Treatment personnel may view the recovery process as a change-engendering rite of passage, but the hardcore alcoholic sees time in recovery as a way to sustain his or her drinking behavior. Thus, there is a conflict between the ideal model—treatment as a rite of passage—and the reality for chronic alcoholics—treatment as a restorative break in the drinking cycle—and the model of treatment as a rite of passage fails to accomplish its goal: abstinence as a life career (Weibel-Orlando 1984).

Despite the problems identified in many Indian programs, there are strong programs that continue to operate effectively and assist clients in recovery. The programs that appear to hold the best promise for survival have four characteristics: (1) they are self-generated, (2) they have officiating or orienting charismatic role model initiators, (3) they involve recovering

clients in ongoing therapy and interaction with the group both as clients and healers, and (4) they see themselves as a community providing structured alternatives to drinking culture (Weibel-Orlando 1989). Table 4 provides outcome information on several programs that contain culturally congenial treatment methodologies.

### LOOKING BEYOND ALCOHOL MISUSE

Current avenues of investigation in treatment have moved beyond examination of drinking behaviors alone and are considering underlying and associated emotional and psychological conditions, often referred to as comorbid disorders. Several researchers have addressed the importance of more comprehensive approaches in treating the Indian problem drinker (Kahn et al. 1988; Somervell et al. 1993; Walker et al. 1996; Hesselbrock et al. 1998). Expanded mental health services for the adolescent AOD user have also been strongly recommended (Novins et al. 1996), prompted by the increasing evidence of the higher prevalence of comorbid disorders and associated behaviors identified in alcohol-dependent persons, including depression (Westermeyer and Neider 1984; O'Neill 1993; Novins et al. 1996), suicide (Zitzow 1990; O'Neill 1993; Chester et al. 1999), conduct disorder (Dinges and Duong-Tran 1993; Sack et al. 1993; Kunitz et al. 1999; Kunitz and Levy 2000), school dropout (Beauvais 1996), delinquency (Manson et al. 1982; Zitzow 1990), and running away (Zitzow 1990).

Domestic violence and sexual abuse are also increasingly correlated with AOD abuse (Novins et al. 1996; see also chapter 16 in this monograph). Indian patients admitted to treatment are much more likely to be given a dual diagnosis (Westermeyer 1993), but few Indian treatment programs have the staff, training, or facilities for the required multicomponent treatment. Most researchers would agree that current AOD treatment must provide for proper identification and treatment of psychiatric comorbidity, for without addressing collateral issues, the primary treatment will likely prove ineffective.

Traditional Indian cultures have mixed views about alcohol misuse and alcohol-related problems in Indian communities. One view holds that alcohol is an evil spirit (Duran and Duran 1995) and thus may not be as amenable to Western psychotherapeutic approaches, with their emphasis on assumption of personal and individual responsibility. A critical concept that needs to be resolved is the long-standing Indian belief in non-intervention. This reluctance to pressure others to change their behavior (Price 1975; Weibel-Orlando 1984) has to be addressed if communities are going to change community-based behavior, as well as expect individual behavior change. A second consideration comes from the IHS requirements for "treatment planning." One wonders what the outcome might have been had the counselors been allowed to let the client suggest what to do next, working with the client to define restoration of "health" from an Indian

perspective rather than just basing success on discharge records. In developing client tracking systems and defining outcomes, the IHS did not fully allow for accommodation of cultural perspectives. One definition of success could have been that the client did not use the program as often as others over an identified period of time. The outcome demand was not necessarily consistent with Indian counselor or client definitions of successful treatment.

The growing importance of "Indian identity" has implications beyond recovery from alcohol. Not only does the presence of the growing pan-Indian "cultural traditions"<sup>2</sup> serve as a standardizing element in alcohol treatment programs across the country, their positive effects are being seen in Indian education programs and other health and welfare services. Some Indian program directors have expressed concern that the pendulum could swing too far, creating a new tribal ethnocentrism as a result of emphasis on local tribal pride and identity. They see a potential risk of fostering discrimination toward other Indians in the service population who are not members of the local tribe. There is also concern that the expression and adoption of Indian identity could interfere with necessary bicultural learning and accommodation. Several studies have cited biculturalism as an important positive adaptation to the reality of Indian life in the contemporary world (Ferguson 1976; French 1980; LaFromboise and Rowe 1983; Schinke et al. 1988; Choney et al. 1996). A thoughtful critic of the

current approaches is Eduardo Duran. He observed that from the beginning of documenting Indian alcohol-related behaviors, the Indian drinking patterns were labeled as "deviant," and the Euro-American middle-class norms and behaviors were established as the standard or validation criteria (Duran and Duran 1995). Thus, what constitutes normative alcohol-use behavior for Indian communities has not been established, and may be an area deserving of further investigation.

Finally, researchers should reexamine existing policies about alcohol in Indian communities to look for clues for interventions. This might include personnel policies, which often call for termination of employees who are drinking during work hours. Instead of automatic termination of employment for drinking, tribal employers could make their policies more consistent with the medical model, which holds that alcoholism is a treatable disease, and offer referral to tribal or external employee assistance programs or outpatient assessment and referral as needed. This would not only salvage a valuable employee but also send a message about the tribe's philosophy about alcohol misuse.

<sup>2</sup> To help clients recover Indian identity, Indian alcoholism programs have used sweat baths, drumming, singing, and pow-wows featuring Fancy Dancing as ways to reconnect with one's identity. These "cultural" practices began in the urban programs and soon spread throughout Indian country as counselors moved from program to program. Thus, the drum circle and sweat lodge became ubiquitous therapeutic features of treatment programs, even in regions of the country where these "traditions" had never been a part of the local culture.

MILITARY HISTORY

Table 4. Treatment Outcome Studies.

Location	Research Method	N	Outcome(s)	Source
Navajo	Administration of disulfiram to alcoholics in hospital and outpatient settings, followed for 9 months	62 Navajo male alcoholics; 39 nonalcoholic male controls	30 subjects reported 75% improvement, indicating that the "pill" aided in escaping drinking groups.	Savard 1968
Western United States <sup>1</sup>	Patients evaluated after 1-4 years by program staff	642	Programs emphasized alcohol education, vocational rehabilitation, and family adjustment. At followup, 28% of subjects showed clear improvement, 28% showed erratic improvement, 27% were unimproved; 17% were lost to followup.	Shore and Von Fumetti 1972
Navajo	Clients in treated and untreated groups were interviewed at 18 and 24 months. Both groups were drawn from the McKinley County jail, and both had 10 or more alcohol-related arrests.	115 clients (111 male, 4 female) required to be on disulfiram for 12 months posttreatment	In treated group, 63% showed improvement at 6 months; 23% showed long-term (24-month) success. In the comparison group, there was a 16% drop in arrests for drunkenness. Average arrests for the comparison group dropped from 9.25 to 7.8, while average arrests for the treatment group dropped from 10.4 to 2.2.	Ferguson 1970
Alaska	Focus on treatment management, as evidenced by chart reviews in 12 medical facilities and 20 programs.	Charts for 291 hospital patients and 484 clients of community treatment programs were	In hospital patients, only 31% had charts with enough data to make an adequate assessment, and for the 6% recognized as	Miller et al. 1975 <sup>b</sup>

Table 4. *Continued*

Location	Research Method	N	Outcome(s)	Source
	Duration: 1 year	evaluated for treatment efficacy.	needing treatment, no treatment was given. For the program clients, 88.4% had treatment plans, but inadequate assessment prior to treatment planning. In both cases, serious deficits existed in health systems' responses to medical needs of problem drinkers.	
Pacific Northwest	Inpatient center subjects with outpatient followup for 18 months	83 males	44% showed improvement, attributed to Indian involvement in planning and operation of programs and addressing special needs of Indian alcoholics, along with improved coordination of services with courts and Indian Health Service.	Wilson and Shore 1975
Coast Salish	Interview, medical, and/or police records were reviewed less than a year or 1 year or more following initiation	24 males: 11 diagnosed with depression and anxiety; 13 diagnosed with aggressive and anti-social behavioral problems. All problems were related to alcohol and other drug abuse.	10 were symptom-free or behaviorally rehabilitated 1 year after initiation; 11 showed improvement after 1 year or less; 2 showed no change; 1 showed deterioration and terminated participation in the Spirit Dance.	Jilek 1982
Minnesota	Clients from inpatient unit followed for 10 years; nonrandom sample and no controls	45 alcoholics (37 male, 8 female)	16% were sober for 2 years, 58% were drinking despite repeated treatments, 20% died by end of	Westermeyer and Peake 1983

*Continued*

Table 4. *Continued*

Location	Research Method	N	Outcome(s)	Source
Alaska	Inpatient residential clients followed for 6 months	276 (207 male, 69 female; 50% were Alaska Native); only 88% were found at 6-month followup.	study period. Those maintaining sobriety had stable jobs and marriages. In those clients found, there was evidence of improved health and decreases in alcohol consumption, adverse consequences, social conflict, accidents, and criminal justice contact.	Kelso and Fillmore 1984
North Central Plains	Hospital treatment for 4-6 weeks and 6 months followup	96 subjects ages 14-23: 20 Indians, 76 Euro-Americans	Decreased drug use and increased self-image. Less improvement in Indian youth than Euro-American youth.	Query 1985
British Columbia, Canada	Qualitative interviews conducted in May 1989	38 community residents of Alkali Lake (20 males, 18 females)	450 community members, allegedly all alcoholics in 1970, achieved a reported 95% sobriety level by 1985. Key factors included community support for recovery, acceptance of Alcoholics Anonymous and personal growth workshops, and community ownership of the problem. Treatment augmented by several pan-Indian or culturally adapted therapies, such as sweating and Talking Circles.	Ben 1991
Sioux	Chart reviews and interviews	290 adolescents in residential treatment	Treatment combined modern psychotherapeutic techniques	Husted et al. 1995

Table 4. *Continued*

Location	Research Method	N	Outcome(s)	Source
		(54% female)	with tribal values and traditions. Students completing treatment had significantly better record for staying in school and improved school grades.	
South Central United States	Review of medical records over 1 year and semistructured interviews with patient's therapist	64 youth from 33 different tribes (53% male); 52% reported previous treatment, and 68% reported being victims of abuse	44% of patients completed a program of individual and group counseling (based on 12-step philosophy), recreational theory (an Outward Bound model), and sweat lodge, with other therapies available. 22% were discharged before completion, and 25% were discharged for non-compliance.	Novins et al. 1996

<sup>1</sup>Programs evaluated included the Ute Tribe Alcoholism Information and Counseling Program, the Jicarilla Apache Alcoholism Program, and the Nevada Inter-Tribal Council Alcoholism Program.

Other policy-based interventions might examine the availability and outlet policies of tribal liquor outlets (tribes that sell liquor can control hours and locations of package stores and can decide if casinos will or will not provide liquor) and motor vehicle policies addressing intoxicated drivers (e.g., tribes could raise the age limit on availability of alcohol to drivers or set lower blood alcohol concentration levels for driving under the influence). Especially important for dry reservations, a consideration of the pros and

cons of maintaining prohibition (thereby requiring people to drink off-reservation and transport liquor home in their bloodstream) should be undertaken. May (1992) cited multiple policy options that tribes could consider, including tax revenue and price, on-premise and off-premise sales, and regulation of advertising, along with serious consideration of rescinding prohibition. May (1992) also proposed reducing environmental risks and taking steps within communities to directly shape drinking prac-

tices through behavior modification, community information campaigns, education and training, and law enforcement.

### CAUTIONS FOR RESEARCHERS

Despite the present enthusiasm for the incorporation of culture-congenial or culture-specific factors in treatment programs and the requirements for culturally sensitive materials, training, and approaches to program development, many experienced observers advise caution. Dozier (1966) suggested that traditional institutional controls would be effective only in groups that still adhered to traditional social and cultural lifestyles and practices. He suggested that successful interventions would be determined by matching the addicted individual's level of acculturation or traditionalism to the intervention strategy. This, in fact, is what Sidney Stone, in collaboration with traditional healer Rufus Charger at the Native American Rehabilitation Program in Portland, Oregon, developed in their Indian Self-Actualization and Conflict Resolution tools (Stone 1981a, 1982; Weibel-Orlando 1987).

La Barre (1938/1969) cautioned that the use of peyote has not been shown in and of itself to curb the desire for liquor and reminded readers that in Mexico, peyote is commonly used while drinking *tesvino* or *mescal*. (Tevino, also known as *tiswin* or *tulapai*, is a fermented beverage made from corn by women in the Apache tribes of the Southwest [Hrdlicka 1904]. Mescal

is a fermented beverage made from the mescal cactus and is more commonly consumed in Mexico.)

Westermeyer (1972, 1974) suggested that Indian alcoholics are no different from non-Indian alcoholics, and that individuals afflicted with similar diseases will respond to similar treatments. More recently, Weibel-Orlando (1989) noted that some behavioral scientists have displayed a tendency to engage in leaps of faith, assuming the efficacy of indigenous healing practices and assuming that such strategies are most likely inherently preferable to Western-imposed intervention models that are perceived as not being culturally sensitive—all without adequate evaluation. In all cases, there is a paucity of research examining what does and does not work, virtually no reports on clinical trials or random assignments to various treatment modalities, and a marked absence of information on treatment outcomes or the manner in which those outcomes were achieved.

Stephens and Agar (1979) noted that while Indian control of programs and Indian treatment models were important, careful thought should be given to what these concepts mean. Indian control, for example, will never be total as long as the primary funding comes from Federal agencies, which are in turn accountable to the shifting emphases and process of the congressional budget. The self-determination legislation (P.L. 93-638) passed by Congress in 1975, and subsequent amendments, have changed the financial responsibilities from National Government to tribal gov-



ernments (although the primary funding is still Federal). But there are no studies of the cost-effectiveness of Indian treatment versus treatment in non-Indian settings, nor comparison of one therapeutic approach compared with another in terms of outcomes. In addition, more information is needed regarding patterns of referrals, bed availability, length of stay, and aftercare options.

Indian treatment models need to be defined and tested, and if they are replicated, the question about "which models for which Indians" needs to be addressed. Proposals for alternative approaches deserve testing, if tribal and/or urban programs are amenable. A model appropriate to one cultural group may not be appropriate to another. With increasing independence in management of programs, different indices may well be employed for measurement and reporting. Some of these may take the form of social or environmental indicators that can be captured from public records (e.g., reduced number of crashes, fewer reported incidents of violence or assault) rather than patient-specific data.

In developing new treatment approaches, we should be asking, What kind of Indians is the model for (urban, rural, reservation, Alaska villagers)? How is the model administered or applied? What about differential levels of acculturation, and how does cultural orientation or identity influence treatment efficacy? Would models be tribal-specific or able to be adapted by tribes drawing on other cultural components and

models? How universal or specific are some beliefs, practices, and symbols, and are these widely acceptable among people of different cultural traditions? Can symbols and values be taken from several places and welded together to create a successful pan-Indian practice? What are the barriers to and incentives for adapting Western treatment models? What is the best means of disseminating successful models? What about generational differences and gender differences? Developing Indian treatment models is not as simple as it sounds.

## RESEARCH AGENDAS FOR THE FUTURE

Although several evaluations of Indian alcoholism programs have been conducted since the 1970s, most have lacked strong research design and rigor. Increasing numbers of programs are incorporating one or more elements of indigenous practices into their therapeutic regimes, sometimes as adjunctive to conventional treatment and sometimes as a clear alternative to conventional treatment. The efficacy of these indigenous practices must be more rigorously and systematically investigated to determine the causal relationships between the intervention and subsequent drinking behavior (Weibel-Orlando 1989). If cultural interventions based on tribal traditions do work, it will be necessary to develop culturally appropriate treatment outcome measures in order to (a) identify those that can be disseminated to other cultural regions, and (b) justify continued Federal support

in a medical care climate that increasingly looks for effective outcome measures. Novins and colleagues (1996) noted that optimal methods for providing culturally competent treatment for youth remain undefined, and the influence of such treatment methods on outcome for both adolescents and adults has not been documented.

Weibel-Orlando (1984), in her essay comparing alcoholism treatment to a flawed rite of passage, observed that recreational drinking has been a cultural feature of some Indian groups for more than 300 years (Dailey 1968). If current drinking behavior persists and continues to be as ubiquitous as it is in some communities, and Indian communities accept drinking as a cultural trait, there will not be a real change in Indian drinking until massive, long-term interventions on a community-wide scale are implemented. Although there has been some important research into the meaning of alcohol for Indians (Waddell 1973, 1975; Hill 1976; Weisner et al. 1984; Duran and Duran 1995; Spicer 1997), little of this work appears to have been acknowledged or incorporated into planned community interventions or treatment approaches.

It should also be noted that the majority of work conducted to understand the meanings of alcohol for Indians is urban-based research. It would be unwise to assume that the same influences affecting urban Indians apply to reservation Indians and Alaska Native villagers, but until more comparative work is carried out, we have predominantly urban models for guidance. To accomplish successful

community-based interventions and treatment, much more information about alcohol, its uses, the culture that encourages its use, and the efficacy of treatments both within programs and as applied to entire communities, must be better understood.

It has been observed that Indian alcoholism treatment is not so much "rehabilitation" as it is "habilitation" or the need to create a culture and social foundation from scratch for the Indian drinker whose drinking career began at age 7 or 9 (Mail 1985). No treatment program will fully succeed until there is a better understanding of the larger context in which alcohol is used and its meanings for Indian people. Also, much more information about the use and function of "traditional" interventions is needed to ensure that positive outcomes can be replicated.

Looking at treatment as separate and distinct from the larger cultural context of Indian alcohol use will only ensure that treatments will continue to fail the majority of those in need. But understanding what does work in current treatment approaches will nevertheless be of value in improving services now available. To accomplish this, research funding guidelines and proposal reviewers will need to demonstrate more flexibility in allowing qualitative research design to give definition to the larger cultural context. Indian program personnel need to become more familiar with research design and purpose so that data collection is not an exercise in nonrelevant information accretion. And tribal governments and leaders must be helped to understand that evaluation

is not a threat but a way in which strengths and weaknesses can be assessed and corrected. Most of all, increasing the ranks of educated Indian researchers will provide new perspectives and approaches to addressing the age-old problems of Indians and alcohol.

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## Chapter 8

# Prevention of Alcohol and Other Drug Abuse Among Indian Adolescents: An Examination of Current Assumptions

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*KEY WORDS: Native American; adolescent; AOD (alcohol or other drug) use pattern; prevention; high-risk youth; social influence prevention model; school-based prevention; community-based prevention; culturally sensitive prevention approach; peer pressure*

After nearly a decade of consistent declines during the 1980s and early 1990s, drug use among adolescents in the United States increased annually between 1992 and 1997; there is preliminary evidence that another downturn may be occurring ("Drug use by American young people. . ." 1998). A similar pattern of changes has been found among American Indian adolescents (Beauvais 1996). During these years of both declines and increases, a great deal of research has

taken place on the causative nature of adolescent abuse of alcohol and other drugs (AODs), and many prevention programs have been implemented. Unfortunately, the trends in AOD use appear to be operating independently of this knowledge and practice; despite the fact that we "know" more about the problem, AOD use is not decreasing in proportion to that increasing knowledge. In this chapter we discuss some of the reasons for this disparity and suggest a different

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emphasis in prevention approaches that may have a higher probability of success in preventing AOD problems among Indian adolescents.

Among adolescents, it is nearly impossible to discuss abuse of alcohol and abuse of other drugs as separate topics. During this developmental period young people who are using other drugs are also very likely to be using alcohol, and the causative factors and prevention approaches are similar for both. Thus, while the emphasis in this chapter is on alcohol problems, the discussion necessarily takes place in the context of the more general topic of AOD abuse.

Further, any discussion of issues pertaining to American Indians must be prefaced with an acknowledgment that there is tremendous cultural diversity among the various tribes of North America. The discussion must be carefully constructed to recognize this diversity, yet at the same time attempt to find commonalities across the various populations. It is by defining these common elements that general principles for the prevention of AOD problems can be developed. Indeed, there are many cultural and social elements shared by American Indians: collectivist values are fairly universal, as are beliefs that place people fully within the web of all creation, not above it; there are higher order spiritual forces that impinge on the lives of individuals; harmony within rather than mastery over the world is commonly valued (see Brown 1982 and Fleming 1992 for an extended discussion of Indian values); and, very importantly, all tribes share a history

of subjugation by colonial forces. The last element is not just a historical occurrence, since racism and prejudice still affect the daily lives of Indian people, resulting in widespread poverty, substandard health care, and meager employment and educational opportunities. In the following discussion there is an implicit recognition that tribes do differ on many cultural dimensions, but the main focus of the discussion is on the common dynamics that have implications for the understanding and prevention of AOD problems.

## OVERVIEW OF INDIAN ADOLESCENT AOD USE

Although the patterns of increases and decreases in AOD use over time are similar for Indian youth and their non-Indian counterparts, the *rates* of use among Indian youth have been shown to be consistently higher (Beauvais and LaBoueff 1985; Beauvais et al. 1985; Bachman et al. 1991; Beauvais 1996). When considering alcohol specifically, Indian youth demonstrate a greater level of involvement. Although just as many Indian as non-Indian youth use alcohol (based on lifetime, annual, and 30-day prevalence), when Indian youth do drink they drink in heavier amounts and have a higher level of drinking-related consequences (Oetting and Beauvais 1989; Beauvais 1992*b*). Furthermore, reservation Indian youth drink more than Indian youth living off the reservation (Beauvais 1992*a*), there are higher levels of alcohol use in some Indian boarding schools



(Dick et al. 1993), and Indian school dropouts drink more than those who remain in school (Beauvais et al. 1996).

Prevention of AOD abuse has been a priority in many Indian communities over the last two decades. There are several reviews of the types of programs that have been implemented (Owan et al. 1987; *Breaking New Ground* . . . 1990; Hayne 1993, 1994), as well as general assessments of program effectiveness (May 1995; May and Moran 1995). Unfortunately, rigorous evaluation has not been a priority among funding agencies and the programs themselves, and it is difficult to determine which programs, if any, have had a sustained effect over time. A few programs have been carefully tested and do show some promise, but they have not been used much beyond the original study period, nor has their long-term effect been determined (Carpenter et al. 1985; Schinke et al. 1986; Gilchrist et al. 1987).

### PREVAILING ASSUMPTIONS IN PREVENTION

Examination of implemented prevention approaches reveals that two assumptions underlie the majority of them. At face value these assumptions seem reasonable and are intuitively appealing; however, there is good reason to question them. Perhaps it is the lack of good program evaluation that has allowed these assumptions to persist without examination.

First, there is an assumption that while there may be different patterns of AOD use, these patterns simply reflect varying levels of underlying

causal factors. For instance, if it is assumed that low self-esteem is a major cause of AOD use, then abstainers would exhibit high self-esteem, those young people who use drugs occasionally would be expected to have some self-esteem problems, and those who use drugs heavily would be burdened by a seriously damaged sense of self. In other words, there is a presumed linear relationship between the underlying factor and the level of AOD abuse. There is, however, reason to believe that among Indian adolescents (and most likely other youth as well) there are different *types* of AOD users and that there are different sets of factors leading to each type (Stice et al. 1998). For example, for a small group of youth who are heavily involved with drugs, low self-esteem may be related to drug use, but for others who are heavily involved with drugs there may be no relationship between self-esteem and drug use (Shroeder et al. 1993). Some drug users (mainly experimenters) may even have higher self-esteem than non-users (Shedler and Block 1990). Alcohol provides an example. Social use of alcohol, while illegal, is normative in many adolescent groups and thus is used by the more popular and successful youth; these young people are more likely to feel good about themselves than those who are socially on the fringes.

A second common assumption, which is related to the first assumption, is that the causative factors are primarily intrapersonal and reflect pathology on the part of the individual. The self-esteem example illustrates

this, but there are similar beliefs that hypothesize anxiety, depression, anger, locus of control, or any of a host of other person variables as being the primary cause of AOD abuse. Prevention programs based on these beliefs are designed to "fix" these underlying emotional problems and thus alleviate the need for the use of AODs. The research to date, however, makes it reasonably clear that the majority of adolescent AOD use is not a result of emotional problems, but is more a function of the social environment of adolescents (see the review by Oetting et al. 1998). Some of the more recent prevention programs that have proved to be effective address these social factors. For example, Botvin and colleagues (1995) have shown that teaching young people to resist social pressure from their peers to use AODs can have a lasting effect in lowering AOD use (see also Schinke et al. 1986 and Gilchrist et al. 1987).

The primary purpose of this chapter is to attempt to shift the attention in AOD abuse prevention among Indian youth from the psychological model of abuse to one that is more attentive to factors related to the social environment (Oetting and Donnermeyer 1998). This is not to say that there are not some Indian youth for whom AOD abuse is a response to emotional distress. But the majority of use is probably of a social origin, and thus prevention should focus on those social factors and their interaction with the individual.

## PATTERNS OF AOD USE

### SOCIAL VERSUS PSYCHOLOGICAL EXPLANATIONS

The data in figure 1 illustrate the basic pattern of drug use over the past two and a half decades (marijuana is used here since it provides the clearest pic-

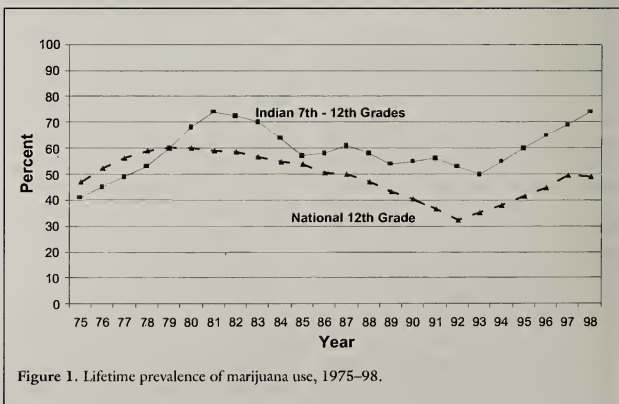


Figure 1. Lifetime prevalence of marijuana use, 1975-98.

ture of changes over time; other drugs follow a similar pattern). This general measure of lifetime marijuana use (i.e., "Have you ever used?") indicates that there are substantial changes in Indian adolescent marijuana use over time that mirror those found at the national level among non-Indian youth. Lifetime prevalence figures provide an indication of the number of both Indian and non-Indian youth that have been exposed to marijuana. From this type of data it is possible to speculate what the social norms are with respect to AOD use and how these norms change over time. For example, if 60 percent of youth in a community have used marijuana, it is likely that almost all youth are aware of this use, marijuana is readily available, and there would be few peer or community sanctions against use if one were willing to try it. On the other hand, if only 10 percent of youth in a community have had any experience with marijuana, it could be surmised that the social climate was not very tolerant of marijuana use.

The main point here is that marijuana use (and likely the use of other drugs) is highly susceptible to influences from the social environment. If we were to rely on the "psychological" explanation of drug use, we would have to assume that the average self-esteem of adolescents, for example, was changing significantly over the relatively short period of time shown in figure 1; this is difficult to fathom. Likewise it would be difficult to imagine that depression or any other of the psychological variables often used to explain drug use would

change within a population in such an orderly way over time. Were adolescents, as a group, more depressed in 1980 than they were in 1990? This is not likely. From these data we are pointed in the direction of looking for social, contextual changes to understand the patterns of use across time.

#### DIFFERENT TYPES OF AOD USERS

Building on the work of Ferguson (1968), May (1994) discussed two types of adult Indian alcohol abusers that differ in both their levels and patterns of alcohol use; understanding these types may be helpful in thinking about adolescents. The two types differ in the way their alcohol use develops and thus require separate intervention responses.

The first type of alcohol abuser is the "anxiety drinker," marked by nearly continual use of alcohol. This use is motivated by grievous problems reflected in a history of personal, family, and social dysfunction. These are the stereotypical "skid row"-type drinkers. The major consequences of use among this group are severe, chronic medical problems that often result in mortality.

The second type of alcohol abuser is the "recreational drinker." Despite the rather innocuous flavor of the label, this group uses alcohol quite frequently and often in extreme amounts. There may, however, be extended periods of sobriety, and many remain somewhat productive in other areas of their lives. This type of drinking is usually found in a social context, and while there may be

extreme inebriation, drinking solely for the effects of alcohol is rare. This category constitutes the greatest number of drinkers and, because of its sheer size, accounts for the majority of the medical and social consequences of alcohol use among Indian populations. Alcohol-related accidents as well as alcohol-related injury and death due to violence are quite common in this group.

The classification discussed by May and Ferguson is useful because it leads to different strategies of intervention for each group and does not treat all abusers of alcohol homogeneously. There is the recognition that motivations and consequences differ, requiring different approaches for prevention and even treatment. For example, anxiety drinkers may require treatment for comorbid psychological conditions and long-standing social dysfunction that has resulted from their drinking. This is a clinical population needing extensive treatment resources and the incorporation of a variety of social and rehabilitation services. Recreational drinkers, on the other hand, may benefit more from lifestyle changes that assist them in meeting social demands, restructuring their social environment, and developing the skills needed to manage a productive life. Of course, many recreational drinkers may also need detoxification and treatment resources to overcome a physiological addiction.

Although further investigation may reveal more than two patterns, it is possible that two similar patterns may be seen in adolescents. The nature of the typology and classification criteria may differ, however, due to social and

developmental variation between the age groups. Mitchell and colleagues (1996), for instance, found that Indian youth should be classified not simply by the amount of alcohol they drink, but rather by the consequences they encounter because of their drinking. Some youth may be able to drink quite a bit without encountering major negative consequences. Other youth, however, who drink a similar amount may routinely experience a variety of problems related to their drinking. This latter group is likely to have coexisting problems (somewhat like anxiety drinkers) that place them at higher risk when they drink.

Data collected on Indian adolescent AOD use spanning the past 25 years also suggest that there are different types of AOD users. The lifetime prevalence indicators discussed above are limited in their ability to describe adolescent AOD use because they do not provide a full knowledge of the intensity of use of any particular drug, nor do they address the use of combinations of drugs. Beauvais (1996) reported on a typology of drug use that does take intensity of use into account (for a complete description of the development of these categories, see Oetting and Beauvais 1983). The data in figure 2 show that the proportion of moderate-level AOD users among Indian youth follows the same pattern as that found for lifetime marijuana use seen in figure 1; the number of youth who use AODs at a moderate level seems to fluctuate over time. On the other hand, the proportion of youth using AODs at the

highest level (i.e., "high risk") has not changed much since 1977.

A reasonable interpretation of these data is that there are at least two types of AOD users among Indian youth (alcohol use at various levels of intensity is taken into account in this typology). The heaviest using group (i.e., the high-risk group in figure 2) may consist of those youth who, analogous to May's anxiety drinkers, are using drugs primarily because of serious intrapersonal problems, which may include some level of psychological distress. These youth most commonly come from poorly functioning families and exhibit multiple and serious problems at an early age (Oetting et al. 1998). The fact that the proportion of youth in this group remains relatively stable over time suggests that the conditions leading to their AOD use have not changed much over the past 25 years. These youth do indeed have a

lot of intra- and interpersonal problems that must be addressed as a means of reducing their AOD use. It is not likely, however, that the usual school- or community-based AOD prevention programs will be powerful enough to provide the help needed by these young people. The problems among these youth are long-term and deep-seated and will require intensive (and expensive) treatment approaches. Amelioration of AOD abuse problems for these youth is important not only for the individuals themselves but also for the more general impact they have within a population. The presence of a large number of heavy AOD-using students in a school creates a climate with a set of norms and expectations that affect all youth.

Moderate-risk youth (see figure 2) are involved in a pattern of use that is primarily social in nature, and thus the pattern will vary according to the pre-

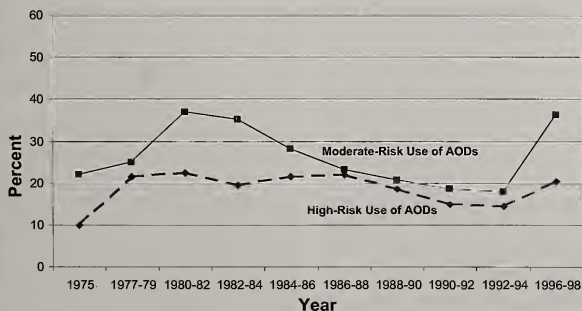


Figure 2. Percentage of Indian 7th-12th graders at moderate and high risk for use of alcohol and other drugs (AODs), 1975-98.

vailing social climate regarding the use of alcohol and illicit drugs. Since social climate is much more likely to change over time than the conditions creating AOD use in the high-risk group, we see a greater variability in AOD use rates among these youth. Prevention programs aimed at improving their self-esteem, reducing depression or anxiety, or treating some other presumed pathology will most likely not be effective since these problems probably do not exist to any great degree within the moderate-risk group (Oetting et al. 1998). Since the locus of the problem does not lie within the individual, it would seem that strategies aimed at altering the social environment, with all of the norms, expectations, and role models that encourage the use of AODs, are more likely to work for this group.

### **EMPHASIS ON SOCIAL AND ENVIRONMENTAL PREVENTION**

One can only speculate about the changes in prevailing social attitudes toward AODs over the past several decades that have resulted in the patterns seen in figures 1 and 2. The following explanation is speculative but does demonstrate the usefulness of an environmental approach. In the 1960s and 1970s drug use increased rapidly amid an atmosphere of uncertainty and ambivalence about the consequences of the use of psychoactive chemicals. The popular culture was rife with pro-drug messages, and there was little resistance from the rest of society.

In the early 1980s a strong parent movement arose, and nearly every community (including many Indian communities) had an anti-drug presence that was rooted in the family; the community climate was against drug use, and during the 1980s and early 1990s social drug use among adolescents decreased annually. This movement gradually waned, however, as the responsibility for drug prevention was handed off to the schools and other government-sponsored programs. With the withdrawal of direct family involvement, drug use rates reversed and began to climb in about 1998.

The pattern described here underscores the importance of the community climate, which is basically a collective expression of family attitudes. Viewing adolescent AOD use in this way leads to an entirely different approach to prevention than those approaches that rely on the identification and amelioration of intrapersonal deficits. This perspective places youth within a social and environmental context to which they are simply reacting, and by changing that context AOD use can be altered.

In the following section we discuss potential social targets that may have high payoff for the reduction of AOD abuse among Indian adolescents who are occasional users of AODs or who are in the moderate-risk category. Embedded in this discussion are a series of research questions, the answers to which would be useful in structuring the social environment of Indian youth to more effectively counter AOD use.

## SOCIAL INFLUENCES

There are a number of sources for socialization and the shaping of attitudes among Indian youth. Once again, it should be recognized that there are many cultural variations in how these socialization processes play out within various tribes, but we are interested here in the major categories of socialization that are common across tribes. Effective prevention efforts for alcohol abuse must include all of these sources. Programs that affect only one sphere of the social environment are likely to be much less effective than a comprehensive approach (May 1995).

## PARENTS

The assumption is often made that the parents of Indian youth share the same knowledge, perceptions, and values as do research and social service professionals regarding the potential harm resulting from adolescent alcohol use. Reports from those who work closely with these families indicate this is not always the case. Some parents see alcohol use and, in some communities, other drug use, as normative and may even support and encourage their children's use of alcohol, marijuana, or other drugs. The many reports of intergenerational drinking bouts in Indian families (and non-Indian families as well) make this point very clear. A number of accounts of the social meaning of alcohol use among Indian people indicate that drinking within families is often a way of maintaining family solidarity and kinship bonds (e.g.,

O'Neill 1993; Spicer 1997). A number of Indian informants have indicated that not drinking with family members can be taken as an affront and may lead to rejection by the family. These reports often come from adult alcohol abusers, but little investigation has taken place among adolescents to determine if they experience the same type of pressure to drink with family members. In addition to direct initiation into the use of alcohol, Indian families also can provide a potent source of modeling for their children, as illustrated in Mail's (1995) description of Indian first and second graders "playing drunk" in the family pickup.

The implications of the preceding discussion are straightforward. Before we can expect to shape values regarding AOD use among children, we must be certain that these efforts are being supported by parents and that family attitudes and behaviors are not undermining prevention efforts. Thus, parent education and training need to occur before or parallel to these efforts among youth. From a research perspective it would seem necessary to have a better idea what the prevailing parental attitudes are so that values and attitudes that promote AOD use could be more effectively countered in parent education interventions.

Possessing attitudes that counter AOD use is only part of the equation—parents must also consistently convey these attitudes to their children. This was likely happening in the 1980s and early 1990s, with children receiving a very powerful message regarding parental value systems, resulting in decreased child drug use

(see Oetting and Donnermeyer 1998 for a discussion of the role of parents in transmitting prosocial norms). Many parents may have a value system that eschews the use of drugs by their children but feel that they have neither the skills nor the opportunity to convey them. In a recent series of focus groups with Indian parents concerning AOD prevention programs, P. Jumper-Thurman found that a significant number of parents expressed a need for information about AODs. They reported being uncomfortable talking with their children about these issues because they felt school-based education programs made their children more knowledgeable about drugs than the parents were. These parents asked that they at least be provided with the same materials that their children were exposed to in the school so that they could talk with them on an equal basis. Further, parents often reported that they were unsure of the drug-related attitudes of other parents, and they felt that they would not receive community support if they spoke out. Well-researched demonstration programs that test the effectiveness of various interventions intended to improve family-child communication patterns within Indian families would be useful to remedy some of these problems (see Van Stelle et al. 1998 for a recent effort in this direction).

It has been long recognized within Indian communities that the rift between families and schools often leaves young people caught between two sets of behavioral expectations. At a minimum, many parents do not

show an interest in the education process; more seriously there is often antagonism toward the schools. Young people are aware of this conflict and are often unsure which set of expectations to respond to. The historical roots of this antipathy toward the schools is, in large part, due to the boarding school experiences of many of today's Indian parents (Chrisjohn and Young 1997). Conditions in these schools were harsh (with both physical and emotional abuse), and in addition to receiving a poor education, many Indian people were left with a large reservoir of negative feelings about the educational process. Many tribes are now taking greater control of governing and service functions, so it is likely that the situation will improve substantially in the future (Robbins 1992). Indian-controlled schools, with increasing numbers of Indian teachers and staff, should bring the schools more into line with the values, attitudes, and beliefs of the communities they serve. This circumstance will provide a much better opportunity for schools and parents to provide consistent messages about AOD abuse. It is hoped that future AOD prevention programs in Indian communities will be more of a cooperative venture between parents and schools.

#### LAW ENFORCEMENT

There is a serious lack of systematic information on law enforcement attitudes and approaches to AOD abuse in Indian communities. In a 1982 paper on crime and violence, May stated that "little concern for Indian



crime has been evident among scholars" (p. 225). A decade and a half later the situation had not changed much, as Gossage and May (1998) characterized the literature on this topic as "not very deep or helpful in explaining the interrelationship between alcohol and/or drugs and crime in Indian Country" (p. 2). Gossage and May described a number of federally initiated programs aimed at drug-related crime in American Indian communities, but little is known about the day-to-day functioning and effectiveness of law enforcement efforts aimed at the reduction of AOD abuse.

At a minimum, it would be important to know whether enforcement is consistently applied and what the prevailing attitudes and policies are toward AOD use by officers. Although not systematically documented, there are many anecdotal reports of Indian police officers who openly use AODs while charged with the enforcement of laws regarding these substances. Inconsistent treatment of AOD violations among adolescents could well lead to disregard for existing policy and law. If the attitudes of police officers are inconsistent with what is being communicated by AOD prevention programs, the result among youth would be even further confusion about what is acceptable within the community.

There is also a need for law enforcement training on pharmacological, medical, legal, and social issues surrounding AOD abuse by Indian youth. Finally, law enforcement efforts would be aided by the

development of clear and consistent laws regarding AODs. On many reservations the legal status of AOD use is unclear, leaving enforcement officers in an untenable position when they confront the use of these substances. Clear and consistent laws not only aid enforcement but are also another avenue for communicating to young people what it is that their community and culture both value and disapprove of in their behavior.

### COMMUNITY

"Community" encompasses the most general environment within which young people are socialized to adult values, beliefs, and norms. The community consists of the various agencies, services, and institutions in a locality, but it is also a more abstract construction that provides a sense of place and belonging. An effective community is one in which there are consistent messages regarding values, beliefs, and norms that are passed on to young people so that they may become integrated, well-functioning adults. With respect to AOD abuse, a young person in an effective community should receive the same message from multiple sources and consistently over time. The AOD abuse prevention field is coming to recognize that reduction of AOD use can best be accomplished by community-wide efforts and should not focus on just a single entity, such as the schools. May (1995) made this point very clearly with respect to Indian communities.

A problem that exists in many Indian communities is that the messages regarding AOD abuse are very

mixed. There are a multitude of explanations for why young people use AODs and an equal number of ideas regarding what is needed for prevention. This inconsistency leads to confusion, ambivalence, and ineffective prevention efforts (Beauvais 1998a). For example, it is still common to hear explanations of Indian drinking in light of the "firewater myth" (Leland 1976), which implies that Indian people have a constitutional vulnerability to alcohol and to a large extent are powerless against the urge to use and the effects of alcohol (and by extension other mind-altering drugs). This belief, still unconfirmed in the research literature, led initially to the complete prohibition of alcohol for all Indian people. Even today some reservations and Alaskan villages have chosen to ban alcohol, with concomitant criminal sanctions. At the same time many tribal personnel policies incorporate an employee assistance program approach for AOD abuse problems, with a philosophy that these are medical problems rather than legal ones. Furthermore, many tribally sanctioned treatment programs are strongly based on traditional spiritual principles, sometimes integrated with a 12-step approach. The underlying belief here is that AOD use is the result of the loss of traditional Indian culture. Some studies (e.g., May 1986; Landau 1996; Daisy et al. 1998) have explored the efficacy of treating alcohol problems on reservations from a harm reduction viewpoint rather than one of complete abstinence. This is in opposition to the approach often found among vari-

ous religious groups on reservations that consider *any* use of mind-altering substances as an unnecessary evil.

Given all of these theories and approaches, one has to wonder how Indian young people view AOD use. There certainly must be a lot of confusion and thus little consistent guidance on which to base their own behavior. It would be useful to convene a series of ethnographic studies to identify the cognitive and cultural models of alcohol use common among Indian youth. Unless we can understand how young people think about these substances, it will be very difficult to intervene. Trotter, Rolf, and Baldwin (1997) conducted this type of research among Indian youth regarding inhalant abuse and were able to identify youth attitudes that were helpful in designing prevention interventions that address the actual perceptions of young people.

The further implication of this plethora of explanations is that there must be an effort to bring the community to some type of consensus so that a unified message can be given to young Indian people. This provides even more reason for promoting prevention approaches that involve all of the relevant segments of the community.

## PEERS

There is another salient reason why it is important to understand youth attitudes toward AOD use. Adults often make the assumption that young people who use AODs are simply acting contrary to the expectations of adults. The perception that youth are flaunting clearly stated and understood

community norms often leads to generational rifts punctuated by anger and frustration. However, it is likely that there are sets of attitudes that are shared among groups of young people that make AOD use normative among their peers so that adolescents see no conflict between their AOD use and adherence to the norms of the community. In a study of Indian adolescents, Mitchell and Beals (1997) found that problem behaviors (e.g., AOD abuse) and positive behaviors (e.g., good academic adjustment) are separate dimensions that are only slightly correlated. It is possible, for example, for young people to be doing well in the school environment, both academically and socially, and to also be using AODs. It would be interesting to know how these young people reconcile this apparent discrepancy in values and expectations between one context that eschews the use of AODs and that of their peer culture.

Knowledge of the ways in which values, attitudes, and behaviors about AODs are transmitted among young people would be valuable in designing effective interventions. We know that initial AOD use is almost always in a social context and that it is rare for first-time use to occur alone (Oetting and Beauvais 1986). There are also consistent reports from counselors and teachers that some very young people feel coerced into the use of AODs (often with threats of violence if they do not participate with the group). Furthermore, in the extended Indian family it is likely that much of the transmission of AOD use behav-

ior occurs from older siblings or relatives, providing an influence over and above that of unrelated peers. An understanding of these multiple routes to AOD use would help inform strategies for intervening among youth.

### SCHOOL

Schools have been the most active venue for drug abuse prevention programs for Indian youth by incorporation of drug education material into the curriculum (May 1995). There is another aspect of the school environment, however, that has not received sufficient attention, and that is school policy toward students who use drugs within the school context. Beauvais (1992a) reported on the levels of AOD use among Indian students while in or near the school environment. Among reservation seniors, 8 percent had used alcohol "during school hours" and 19 percent had used alcohol "during school hours away from school." Smaller, but significant, numbers had used alcohol "on the way to school" or "right after school." Most schools have policies relating to these types of behaviors, but there is little research to help determine which policy approaches are better than others. It is likely that the most important issue is not the nature of the policies but rather the consistency with which they are applied that makes the most difference in reduction of AOD use.

Although these data show the levels of AOD use within the school context, the same report (Beauvais 1992a) reveals that the majority of

use occurs elsewhere. For example, 70 percent of reservation seniors report using alcohol "at weekend parties" and 70 percent "at night with friends"; 34 percent admit to drinking "while driving around" and 50 percent say they drink "at home." These figures make it clear that, although some alcohol use does occur at school, the majority of use is within the context of the larger community. These data raise the question of why the schools appear to have been given the major responsibility for reduction of alcohol use when most of the problem occurs outside of their jurisdiction. A recent comment by a school superintendent to one of the authors of this chapter is revealing: "We have to teach our kids everything from tying their shoes to putting on condoms; when do we have the time to teach them academic skills?"

### THE IMPACT OF FAILED PREVENTION PROGRAMS

In any Indian community it is not uncommon for there to be a history of numerous anti-AOD programs that have come and gone over the years. Unfortunately, few of these programs have ever been effectively evaluated, so there are few data to indicate what has been effective and what has not. It is also unfortunate that the tenure of these programs is tied more to the availability of Federal funding than it is to a deeply ingrained community readiness to deal with the problem or perhaps to the program's effectiveness. When these programs are in operation, there is a great deal of

enthusiasm among those employed by the program, but this enthusiasm is often not shared by other community members. Rather, what generally exists is a jaded attitude about prevention and a passive resistance until the funding runs out—which it clearly will. It is this overarching pessimism that is of the greater concern. Communities are left with the feeling that the alcohol (and more recently other drug) problem has always been there and always will be, and that there are forces beyond their control that drive the motivation to use and abuse AODs. The presence of this social malaise most certainly has its effect on Indian youth and only reinforces the sense that AOD use is normative and thus refractory.

There is another way in which the procession of federally funded programs affects a community's ability to come to grips with AOD programs. Most of these programs are heavily dependent on external resources and expertise. Most Indian communities do not have the capability to prepare a fundable grant application; thus, from the very beginning a university or external organization has "ownership" of the program. In addition, research grants applications are rarely funded unless they have a cadre of well-known academic researchers who will direct and otherwise have a major role in the implementation of the program. This creates a sense at the community level that the problem can only be resolved with a substantial amount of outside effort. What gets lost in the process is the wisdom and experience of local people, who may

be in a better position to conceptualize the problem in a culturally congruent way.

### COMMUNITY READINESS

Exploration of new approaches that examine the ability and willingness of a community to engage in effective prevention is now under way (Oetting et al. 1995; Plested et al. 1998, 1999; Thurman et al. 2000; Jumper-Thurman et al. 2001). The concept of "community readiness" is based on the premise that each community is at a certain level of preparedness to conduct prevention activities. If an intervention is attempted in a community that is not ready, or able, to meet the demands of that intervention, it will undoubtedly fail. The lowest level of readiness, for example, is that of "community tolerance." In this instance, a community is not even aware that a problem exists and thus any attempts at prevention that do not recognize this prevailing attitude will be ineffective. Another low level of readiness is "community denial." Here there is active resistance to the recognition of a problem or denial that anything can be done about it. As in the psychological construct of denial, there is some uncomfortable sense that something is not right and there is avoidance of any evidence that a problem exists. A little higher up the continuum, beyond denial, is a stage of "vague awareness" that something is wrong and perhaps some activity is taking place to address a problem.

In the full community readiness paradigm, there are nine levels of readiness that can be assessed and

accurately measured through community interviews (Oetting et al. 1995). The data from these interviews can be used to assign a numerical value indicating what level the community is at. Furthermore, the model is prescriptive, as well as descriptive; that is, there are specific activities that can take place at each level to move a community along to higher levels of readiness. Taking this community development approach, the problem of mismatching interventions with a community's capability can be avoided.

An additional element of community readiness is that it actively promotes community ownership of the problem. As part of the process, the community engages in an assessment of existing strengths and resources and exploits these before seeking outside assistance. This approach could be very effective in Indian communities where there has been a long history of failed interventions that have been imposed from the outside. An assessment and mobilization of existing social resources may have a higher payoff for large numbers of Indian youth than initiatives that target presumptive psychological deficits, thus helping to end the long succession of externally imposed solutions that most often fail.

### REASSESSING THE ROLE OF CULTURE IN PREVENTION

It is not uncommon to hear from elders and others in Indian communities that it is the loss of traditional cul-

ture that leads to AOD use among young Indian people. Based on this belief, then, most prevention programs contain a significant emphasis on reeducating young people in the traditional ways and beliefs of their tribe as a means of deterring AOD abuse. Several surveys over the past 10 years have shown that the majority of tribal prevention programs incorporate a significant cultural component (Owan et al. 1987; *Breaking New Ground* . . . 1990; Hayne 1993, 1994). Unfortunately, prevention programs rarely receive the rigorous evaluation that is needed to test directly the validity of the assumption that cultural activities or culturally based programs deter AOD abuse.

There is reason to question whether the inculcation of traditional Indian culture will affect the rates of AOD use among adolescents. A number of studies have examined the link between AOD abuse and cultural identification among Indian youth and have been unable to find a relationship (Trimble 1995; Bates et al. 1998; Beauvais 1998*b*). AOD use appears to be equally distributed across the full spectrum of levels of identification with Indian culture; Indian youth who are highly identified with their culture appear to use AODs at the same level as those who are only marginally identified.

How can these research findings be explained in the face of such strongly held beliefs that Indian culture protects young people from AOD abuse? It must first of all be recognized that perhaps the research conducted to date has not been asking the question

in the right way. Culture is a very difficult concept to quantify and does not lend itself well to the usual types of quantitative, scientific inquiry. Perhaps with time, and a more enlightened research approach, a fundamental relationship will be found. For the moment, however, it might be worth pursuing some alternative explanations.

First, there has been a consistent finding that one's peers have the most influence over the decision to use or not use drugs (Oetting and Beauvais 1986; Oetting and Donnermeyer 1998). This applies to adolescents in general as well as to Indian youth (Swaim et al. 1993). It is quite possible that the general adolescent culture is by far more powerful than traditional Indian culture in the lives of Indian young people. It is important to realize that Indian youth are no longer shielded from what is happening in the larger adolescent society. In the past, "pop" culture was slow in diffusing to the remote reservation areas. With the dramatic expansion of communication mechanisms within the last several decades, however, the transmission of the latest trends in the larger society is nearly instantaneous. Perhaps Indian youth are being so inundated with messages that tend to define "adolescence" in the larger society that the meaning of traditional culture and values is being overwhelmed. In addition to media influence, another means of the transfer of values and behaviors from cities to reservation areas is the high level of movement among adolescents back and forth from cities to reservations. For example, many reservations are

now becoming very concerned about the presence of gangs. Adolescent street gangs are certainly not something that is a part of traditional Indian culture, and that influence has been transferred from more urban environments. In essence, Indian youth have become very much a part of the adolescent culture of the United States, and that culture includes the use of AODs.

Although the period of development that is defined as adolescence may not have been present in many traditional Indian cultures, it is clear that the transitional period of "teenagehood" is now a part of American Indian life (Beauvais 2000). Among other factors, this has come about through the institution of formal education that delays a young person's entry into full adulthood. Further, the nature of modern employment requires an extended period of training. Adolescence, in the non-Indian sense, is marked by a striving for independence from the family and, in many cases, an active resistance against family and societal norms. The mechanism for this is the formation of peer structures where a new set of values, beliefs, and behaviors supplants those that are transmitted by the family and other carriers of traditional culture. In today's adolescent world this often includes values that are conducive to the use of drugs. It is evident from figures 1 and 2 that the trends in drug use for Indian youth closely parallel those found for non-Indian youth.

In many of the programs that incorporate Indian culture there is an

assumption that young people will automatically make the connection between adherence to traditional ways and leading a sober life. While such a link may exist, it takes a very high level of cognitive ability to comprehend it, and this influence has to compete with non-Indian adolescent peer culture, which often embraces AOD use. Psychoactive substance abuse is a relatively new phenomenon for Native people in North America, and specific cultural mechanisms for controlling use have not evolved. Thus, while Indian youth may enjoy culturally imbued programs, what they learn is not specific enough, nor is it translated into specific behaviors or skills that can make a difference in their daily lives. Given that the culture has no explicit forms for dealing with alcohol and illicit drugs, it is understandable why Indian adolescents might be somewhat perplexed by such general messages as "Doing drugs and drinking are not part of the Indian way."

The strong belief in the protective value of traditional Indian culture against AOD use may have its roots in the experiences of recovering adults, many of whom are actively involved in the design and implementation of AOD prevention programs. These individuals have been through a heroic struggle with their own addiction, and for most of them this process has included a strong revitalization of their traditional Indian culture. This spiritual reawakening has played a crucial role in their quest for sobriety, and so it is understandable that they would see culture as an

effective antidote to the use of AODs among adolescents. The difficulty with this is that the experience of the recovering person came at a different developmental stage and involved a different emotional challenge. Recovery typically occurs at an older age when the social demands and expectations of adolescence have waned. It is an intense personal process that requires a rearrangement of emotional, spiritual, and cognitive approaches to life, and it is easy to see how traditional Indian values and beliefs would be important to this process. Adolescent AOD use, on the other hand, is primarily a social process that is so powerful that it overshadows the messages from traditional culture.

Do these concerns mean that traditional Indian approaches should not be used in prevention programs for young Indian people? Probably not, but there are a number of issues that should be considered. First, it should not be expected that the inculcation of Indian values, beliefs, and behaviors, in and of themselves, will resolve the problem. Indian young people are enmeshed in a larger adolescent culture that is the primary force in their lives, and addressing the demands of this larger culture will probably have the highest payoff. The building of social resistance skills, for instance, has been shown to be an effective strategy among youth from the majority culture and would most likely be effective with Indian youth (Botvin et al. 1995). Schinke and his colleagues (Schinke et al. 1986; Gilchrist et al. 1987) attempted social skills training

with Indian adolescents, which has demonstrated some promise; however, these efforts have not been widely used.

Second, if Indian cultural messages are used, care should be taken to make certain that they are tailored to the specific issue of AOD use and are not left in the realm of vague, cultural ideals. Younger adolescents in particular are not cognitively sophisticated enough to make the connections between Indian values in the abstract and specific behaviors such as AOD use. Fortunately, there are many Indian cultural forms that can be used strategically. One of the more obvious is the use of the universal trickster, Coyote, as a way of helping younger children understand the seductive nature of psychoactive chemicals.

Finally, one must wonder about the attempt to instill Indian values and beliefs outside of the family context. It has been commonly observed by both researchers and community people that families, including the extended family, are the carriers and transmitters of Indian culture. But, unfortunately, most AOD prevention has been implemented in the schools, which tend to be an artificial environment for the transmission of culture. The use of families as the center of a prevention strategy could be very effective in Indian communities. Although the argument has been made here that peers predominate in influence among adolescents, we have found that among Indian youth families still exert a much stronger influence over behavior than they do among non-Indian youth (Swaim et



al. 1993). As previously discussed, Indian families often express a strong desire to be more involved with the lives of their children, especially in being involved in the prevention of AOD abuse and other social problems. Although it is often observed that youth who are heavily into drugs come from very dysfunctional homes, the extended nature of Indian families provides the opportunity to find a number of relatives who could be instrumental in a family-centered intervention.

## SUMMARY

AOD use among Indian adolescents appears to be running a course that is independent of efforts to understand and remediate the problem. One possible reason for this is that the heterogeneity of the causative factors, and resultant variability of AOD-using patterns, has been poorly recognized. Some youth do use AODs as a result of interpersonal stress stemming from long-standing family and personal dysfunction. The majority of AOD-using youth, however, are enmeshed in a social milieu that is conducive to, or at a minimum does not proscribe, their AOD-using behavior. Prevention approaches based on remediation of personal problems will have only limited success with this latter group.

Efforts are needed to understand the social forces, including family, school, peers, culture, and community, that provide the context for adolescent AOD abuse. It is only by addressing these factors that the impact of adolescent culture, with its

emphasis on AOD use, can be effectively countered. Indian communities and Indian culture both embody a variety of strengths and resources that can be helpful in reshaping the social milieu of Indian youth in ways that deter AOD use, but past approaches to mobilizing these strengths have been ineffective.

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## Chapter 9

# Gender and Ethnic Differences in Adolescent Self-Esteem in Alcohol and Other Drug Use Research: A Rasch Measurement Model Analysis

Joseph E. Trimble, Ph.D., and Eldon R. Mahoney, Ph.D.

*KEY WORDS: Native American; self-esteem; adolescence; gender differences; ethnic differences; problem behavior theory of AODU (alcohol or other drug [AOD] use); statistical modeling; specificity and sensitivity of measurement; alcohol use test; psychosocial AODU identification and diagnostic method; cultural sensitivity*

A few years ago the senior author of this chapter was invited to attend several evening meetings of American Indian parents, community leaders, and alcohol and other drug (AOD) use specialists held at a community center on a nearby reservation. The meetings were initiated in response to an alarming increase in AOD-related problems occurring among many of the community's youth. Over the course of these meetings, parents and community leaders offered many sug-

gestions for dealing with the problems; these suggestions often led to lengthy and sometimes heated debates. As one can imagine, there was considerable anger expressed at those who provided AODs to young people and at the physical and psychological damage created by the youth while in their intoxicated states. For many residents, though, defining the problem and its solution was straightforward: the young people had a problem with their self-esteem, and AOD abuse

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would decline if they felt better about themselves. The belief that most youth, especially those of ethnic minority background, engage in AOD use because of problems with their self-esteem is a common one in many communities across the country—including many American Indian communities.

Fleming and Manson (1990) conducted an extensive evaluation of the characteristics and effectiveness of 18 American Indian AOD prevention programs. Ninety-four percent of the community-based programs emphasized primary prevention activities (i.e., activities developed to prevent a health-related problem from occurring among those who may be at risk). Some of these activities involved the use of educational materials, promotion of Indian identity and building self-esteem through cultural events, and the use of self-help groups. Fleming and Manson also asked their respondents to identify those factors that placed Indian youth at risk for AOD use. Eighty-eight percent singled out poor self-esteem and parental abuse of alcohol as the greatest contributors to high risk. The respondents also identified additional contributing factors, including use of drugs by peers and friends; abuse, neglect, and family conflict; sexual abuse and emotional and psychological difficulties; previous suicide threats or attempts; and alienation from the dominant culture's social values. The researchers also asked their respondents to identify factors that presumably prevented one from using and abusing AODs. Protective factors iden-

tified by respondents included a well-defined spiritual belief system, a positive sense of self-worth, ability to make good decisions about personal responsibilities, and the ability to act independently of the influences of others. The respondents also believed that one's friends and peers who act in healthy and responsible ways could serve as models for at-risk youth.

Owan, Palmer, and Quintana (1987) surveyed nearly 420 schools from Head Start to the secondary school level with large American Indian enrollments and 225 different tribal groups who were receiving grant support for AOD abuse projects from the Indian Health Service. Both the school and community respondents indicated that AOD abuse education was a major priority, followed by a concern for building self-esteem and developing effective coping and decision-making skills. Owan and colleagues drew some important conclusions that emphasize the need for "early intervention to combat alcohol and substance abuse among Indian youths" (p. 71). They also emphasized the point that Indian youth need strong families to promote positive self-esteem, identity, and values. "Weak families," they argued, "produce uprooted individuals susceptible to 'peer clusters' prone to alcohol and substance abuse" (p. 71).

Moving from the lay and community setting to the research setting, there has been intensive study on the etiology of AOD use, and some of this research has addressed the relationship between self-esteem and AOD use. However, our knowledge



of measurement topics, particularly those that occur with culturally unique populations, leads us to contend that there are problems associated with the measurement of self-esteem and that the problems may stem from different cultural understandings of the self-esteem concept. There are issues, too, concerning the relationship between self-esteem and AOD use among adolescents that deserve research attention. However, this chapter focuses on the measurement and analysis of a particular self-esteem scale rather than the relationship between self-esteem and AOD use.

To set the stage for the findings of the Rasch model analysis of the self-esteem scale reported in this chapter, we first discuss the *self* construct. Consideration is given to the concept of cultural equivalence and measurement. Following a detailed description of the measurement process and its relationship to Rasch model statistical analysis, we report the results of our analysis and discuss the findings.

### **SELF-ESTEEM: CONCEPTUAL AND METHODOLOGICAL ISSUES**

Self-esteem has been defined in a number of ways by theoreticians and researchers (see Wylie 1979). The definition developed by Rosenberg (1965) is one of the more widely accepted ones:

When we speak of self-esteem, then, we shall simply mean that the individual respects himself, considers himself worthy; he does not necessarily consider

himself better than others, but he definitely does not consider himself worse; he does not feel that he is the ultimate in perfection, but, on the contrary, recognizes his limitations and expects to grow and improve. Low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, self-contempt. The individual lacks respect for the self he observes. The picture is disagreeable, and he wishes it were otherwise. (Rosenberg 1965, p. 31)

The measure of self-esteem discussed and subsequently analyzed in this chapter follows Rosenberg's definition; however, we go beyond this definition to focus on the way people from different ethnic groups attempt to define themselves and the categories they use to do so.

### **SELF-ESTEEM AS A MASTER STATUS**

Central to the theoretical notions of the development and maintenance of self-esteem is that the statuses one occupies in society are major sources of self-esteem. Locations in the social structure that serve as "master statuses" are salient for individuals because these statuses tend to influence all aspects of their psychosocial existence. Gender and ethnicity are two of the prominent master statuses in the United States and likely elsewhere where emphasis is placed on individualism and ego-centered development. This may especially be the case for adolescents; because they have not yet taken other locations in

the social structure (e.g., occupation, educational attainment, marital status), they may be very dependent on these master statuses for their sense of self.

Academic and intellectual interest in the self construct and its relationship with adolescent development likely began with theoretical discussions and subsequent research concerning the basic tenets of psychoanalysis and, more specifically, ego psychology. Additionally, interest in the self was advanced by Carl Rogers through his early writings on the construct and its importance in directing the goals of his well-known client-centered counseling approach. Indeed, the self construct captured the attention of numerous 20th century researchers, theoreticians, and clinical practitioners; moreover, many educators built elementary and secondary curricula on the premise that self enhancement should be the goal of learning outcomes. Literature on the self construct is very extensive and comprehensive, with many academic disciplines represented in the studies and debates. A thorough review of the construct no doubt would cover several volumes, and such a review is beyond the scope of this chapter.

In this chapter, we are primarily interested in self-esteem matters that occur among culturally unique adolescents and the patterns that emerge for gender and ethnic statuses. Although the literature on this topic is extensive, only a handful of empirically based literature citations include the topic of AOD use with gender and ethnic variables.

## ETHNIC AND GENDER PATTERNS

The research findings on gender and ethnic differences in adolescent self-esteem are far from uniform. Dukes and Martinez (1994) concluded that "the impact of racism and sexism on the self-esteem of members of minority and dominant groups remains controversial" (p. 105). The work of these researchers (Martinez and Dukes 1987, 1991; Dukes and Martinez 1994) also suggests that conceptualizing ethnicity and gender as separate master statuses may be an oversimplification. Introducing the concept of "eth-gender," these researchers found differences in self-esteem level as a function of various ethnicity and gender combinations. This suggests, of course, that master statuses may be additive in their influence on self-esteem.

The discussion of gender and ethnic differences in self-esteem takes place, however, in the context of a dubious measurement of self-esteem. While the most popular measure has been the Rosenberg Self-Esteem Scale (Rosenberg 1979), numerous other instruments have been used, some of which are variants of Rosenberg's original scale. Many critics have suggested that the inconsistency in self-esteem research findings may reflect differences in the way the construct is measured (Gray-Little and Applebaum 1979; Wylie 1979; Dorgan et al. 1983; Trimble 1987). The utilization of these various measures has taken place in the context of inadequate evaluation of the instruments, including the Rosenberg instrument. These instruments, when evaluated,

are usually based on outmoded measurement models that define a measure as adequate when it contains virtually none of the characteristics needed for scientific activity. We explore this point in more detail later in the chapter. For the moment, though, we strongly contend that before any attempt can be made to address the question of gender, ethnicity, and "ethgender" differences in self-esteem, we must understand the measurement of self-esteem in individuals differing in gender and ethnicity.

#### PROBLEM-BEHAVIOR THEORY AND SUBSTANCE USE

For the past 30 years considerable attention has been devoted to exploring the correlates of personality variables with AOD use patterns. Although many of the published articles are non-theory based, they are at least implicitly grounded in the *problem-behavior theory* developed by Jessor and Jessor (1977). The conceptual framework of the theory consists of antecedent-background variables, social-psychological variables, and social behavior outcome variables. In the social-psychological variable domain, the theory holds that self-esteem is an essential element in the personal belief structure along with social-criticism, alienation, and locus of control. Jessor and Jessor maintained that "the preservation of high self-esteem serves as a barrier to engaging in deviance" (1977, p. 21). Thus, one's sense of self-esteem can be negatively influenced if one engages in nonconforming or problem behaviors. So, according to their theory, if adoles-

cents heavily use psychoactive drugs and alcohol, then their sense of self-esteem must be low; conversely, if self-esteem is high, then there should be no need to engage in problem or deviant behaviors.

In the past two decades numerous AOD use researchers have attempted to identify the correlates of AOD use patterns with a variety of social and psychological constructs. In part guided by the tenets of problem-behavior theory, much of the research effort has focused on self-esteem, especially as it relates to adolescents. Results have been uneven and discrepant. Schroeder, Laflin, and Weis (1993) maintained that "regardless of the definition or measure of SE [self-esteem] used, no sizeable relationship between SE and drug use has been found" (p. 659). Moreover, they contended that the inconsistent research findings can be attributed to (a) measurement of AOD use, (b) presence of confounding variables in the research design, (c) inferring causality from correlation data, (d) statistical problems stemming from inflated research design error, (e) misinterpretation of findings, (f) failure to report strength of association indices, (g) reporting insufficient statistical information, and (h) procedures and scales used to measure self-esteem.

Moore, Laflin, and Weis (1996) used the "social deviance" model, a variant of problem-behavior theory, to test the relationship between self-esteem and cultural norms. As predicted in their problem statement, their results failed to support the model. They concluded that "consid-

eration of the respondents' cultural norms does not reveal a relationship between [self-esteem] and tobacco, marijuana, alcohol, and/or drug use" (p. 539).

In summary, researchers have not found any consistent relationship between self-esteem and AOD use. Yet work in this area continues despite the criticisms. A cursory review of literature published since 1993, the year Schroeder and colleagues published their critique, indicates that the number of published articles extends well into the hundreds.

Although considerable attention can be devoted to the way the self-esteem construct is conceptualized, measured, and interpreted, we contend that the way self-esteem scales are analyzed, especially when used with culturally different populations, may be problematic. To illustrate, later in this chapter we present a series of analyses using Rasch modeling and measurement procedures to show that three ethnic groups may be responding to and interpreting a common set of self-esteem items differently; consequently, differential response patterns may be attributed to ethnic and cultural orientations of the respondents. We then present a measurement model that specifies the characteristics of scientific measurement and analyzes the measurement of self-esteem typically used in AOD use studies among adolescents differing in gender and ethnic identification. Findings from our analysis can assist researchers in understanding how ethnicity and gender status influence psychosocial scale items.

In the next section, we provide summary information about the issues associated with the development and use of psychosocial scales for cultural-specific and cultural-comparative research. Debates abound regarding the influence of one's worldview on understanding and interpreting standardized tests and psychosocial scales (for reviews, see Berry 1969; Berry and Dasen 1974; Irvine and Carroll 1980). Moreover, many cross-cultural psychologists contend that "comparing elements from differing societies leads to inadmissible distortions of reality" (Kobben 1970, p. 584). The anthropologist Goldschmidt (1966) equated this contention with what he called the Malinowskian Dilemma; that is, "every culture [must] be understood in its own terms, that every institution be seen as a product of the culture within which it developed. It follows from this that a cross-cultural comparison of institutions is essentially a false enterprise, for we are comparing incomparables" (p. 8). Cultural-comparative research using instruments such as self-esteem scales may be fraught with problems of "incomparability" and thus may lead researchers to draw conclusions about a finding that may not be valid or justified. To avoid these possibilities, attention must be given to the concept of cultural equivalence in measurement studies.

## CULTURAL EQUIVALENCE AND MEASUREMENT

Use of standard assessment scales and tests across cultures is filled with numerous problems and concerns,

which have been pointed out by Irvine and Carroll (1980), Irvine and Berry (1983), and Lonner and Berry (1986), among others. The problem of cultural equivalence or comparability is the most common theme that runs through the literature on cultural-comparative research. Considerable attention has been given to this important issue (see especially Berry 1969; Brislin et al. 1973; Berry and Dasen 1974; Poortinga 1983; Trimble et al. 1983; Malpass and Poortinga 1986).

#### DEFINITIONS

Cultural equivalence refers "to the problem of whether, on the basis of measurements and observations, inferences in terms of some common psychological dimension can be made in different groups of subjects" (Poortinga 1983, p. 238). Most cross-cultural researchers agree that cultural equivalence can be examined by giving attention to the following concepts: functional equivalence, linguistic equivalence, conceptual equivalence, stimulus equivalence, and metric equivalence.

Embedded in the notion of equivalence is the fundamental tenet that comparisons between groups require that a common, if not identical, process exists; stretched to the extreme, the notion holds that a universal process must exist to demonstrate and assess comparability. Consequently, to achieve functional equivalence two or more behaviors must "pre-exist as naturally occurring phenomena" that are related or identical to a similar problem or circumstance; the behaviors serve a similar function for both groups (Berry 1969, p. 122).

Linguistic equivalence exists when the translated content of survey or questionnaire items exhibits identical meaning when applied to two or more cultures (Prince and Mombour 1967). Conceptual equivalence exists when constructs are mutually intelligible and meaningful across ethnocultural groups; that is, "subjects have an equal understanding of the meaning of behavior or of concepts pertaining to behavior" (Malpass and Poortinga 1986, p. 66). Often cross-cultural researchers include stimulus equivalence and response equivalence in discussions about conceptual equivalence, since the equivalence of meaning of both terms is a necessary prerequisite for cultural comparative research.

Metric equivalence or scale (scalar) equivalence (Poortinga 1975) "exists when the psychometric properties of two (or more) sets of data from two (or more) cultural groups exhibit essentially the same coherence or structure" (Berry 1980, p. 10). Of the five equivalence types, metric or scalar equivalence has received the least amount of attention, perhaps because it is the most technical and poorly understood. Yet for the psychometrician it may be the most important concern. Before a measure can be used in cultural comparative research, it must first meet standards within the groups; then and only then can it be used between two or more groups.

Metric or scalar equivalence actually involves two separate but related forms of equivalence. Poortinga (1983) pointed out that scale equivalence involves the "equality of scaling units across groups" (p. 248); equality

emerges from the discovery that the statistical relationships among the dependent variables are similar for all groups. Metric equivalence, however, is concerned with the relative stability of the variables across the research experience. In addition, Drasgow (1987) offered the term *measurement equivalence* as a variant of metric equivalence to refer specifically to the constancy with which traits are measured among different subpopulations. Unlike the other forms of equivalence, metric, scalar, and measurement equivalence depend on response outcomes and, therefore, can only be determined after data have been collected and analyzed.

Analysis of data to test the existence of metric equivalence typically relies on the use of multivariate statistical routines. Initially, when cultural equivalence emerged as an issue in cultural-comparative research, researchers relied on principal components and factor analyses. Strength of the factor-based scales for the respective groups serves as partial criteria. Factor solutions also can be expanded to include congruence coefficients and related manipulations to isolate the nature of the equivalence. Windle and colleagues (1987) and Nishimoto (1986), for example, used factor solutions to examine the metric equivalence of personality scales administered to Asian and non-Asian populations. In both studies the factor solutions did not differ. However, the item composition and thus the factor meanings did vary.

### STATISTICAL APPROACHES TO ASSESS EQUIVALENCE

A few cross-cultural researchers also recommend use of covariance structural modeling (e.g., LISREL) or variants of confirmatory factor analysis to test for metric equivalence (Poortinga 1983). There are limitations associated with the use of exploratory factor models; the advances in confirmatory factor modeling, however, appear to overcome these limitations. Some researchers recommend a form of latent trait analysis, especially when the scale contains binary scores. The Rasch (1960/1980) one-parameter model can be used, but Irvine and Carroll (1980) remind us that the model should be used "along-side traditional models as part of another method of looking at the same data" (p. 210).

The use of item response theory (IRT) to assess metric equivalence has produced interesting findings. Ellis and colleagues (1993) used IRT to test the equivalence of the Trier Personality Inventory, originally developed for use in West Germany. The differential item functioning (DIF) index showed that subsequent retranslations of original inventory items reduced the overall content and reduced error due to translations. Bontempo (1993) also used IRT on an individualism-collectivism scale to demonstrate the efficacy of the procedure and to test for translation bias. Both lines of research show promise for using IRT to assess equivalence of translated scales and tests.

The use of factor analysis in psychometric research and testing equiva-

lence is not without criticism (Kline 1983). Although some of the arguments are compelling, a discussion of this debate is beyond the scope of this chapter. Nonetheless, three critical points should be made: (1) factor solutions rarely fit the data completely in cultural-comparative research, primarily because of nonrandom measurement and translation error and unspecified conceptual contributions to the obtained weights; (2) factor solutions are suggestive; and (3) data should be, at a minimum, at the interval level. Most scales and inventories use binary or ordinal level response categories with presumed equality of the numerical distances between the alternatives; distortions can exist, thus eroding the strength of the correlation coefficients. Kim and Mueller (1978) pointed out that in a sense "variables with limited categories are . . . not compatible with factor analytic models." The most forceful of the critics is Duncan (1984), who considers factor analysis to be a failure in the measurement field because, among other points, "we . . . see nothing more than a 'correlational' science of 'inexact constructs'" (p. 207).

Rasch modeling and analysis is a powerful alternative to factor analysis in assessing the properties of tests and psychosocial scales. According to Linacre (1996), "factor analysis is confused by ordinal variables and highly correlated factors. Rasch analysis excels at constructing linearity out of ordinality and at aiding the identification of the core construct inside a fog of collinearity" (p. 470).

In the next section, we provide a detailed summary of the major properties and elements associated with Rasch analysis. The description is intended to provide the reader with background information to assist in understanding our approach to the subsequent analysis of the self-esteem scale selected for use in this chapter.

### THE MEASUREMENT PROCESS AND ADEQUATE MEASUREMENT

Rasch modeling is a stochastic approach developed by the Danish mathematician Georg Rasch for the analysis of test responses and variations of ordinal observations. From the sums of the observations, Rasch analysis constructs linear measures of person abilities and item difficulty along with measures of precision (reliability) and accuracy (fit) indices. As originally conceived, the Rasch model specifies that each useful test response is an outcome of the probabilistic linear interaction between a person ability measure and an item difficulty measure (Rasch 1960/1980; Wright 1994). It should be noted that the Rasch model is not a data model; as Wright (1988) stated, "You may use it with data, but it's not a data model. The Rasch model is a definition of measurement, a law of measurement" (p. 32).

Andrich (1988) pointed out that Rasch analysis is an evolving statistical approach that challenges a data-dominated approach to how science should be done and which problems are useful. Rasch approaches have been gaining acceptance in the scientific community,

although there has been and continues to be resistance from sectors of the test development community. In this section we describe various elements necessary to understand the Rasch approach and its corresponding statistical features.

### MEASUREMENT ELEMENTS

Following Wright and Masters (1982) and Andrich (1988), measurement in science is defined as consisting of the following elements: variables, unidimensionality, differences of degree and differences of kind, and item-free person measurement.

#### Variables

The central requirement for scientific observation is the ability to assess the magnitude or quantity of a property of interest. When the magnitude of a property has been operationalized, it is a variable. When the variable has been constructed, the property of interest can be measured. This measurement results in a numerical value of quantity or magnitude of the property on which arithmetic operations can be meaningfully (and ethically) performed. These numerical values have specified mathematical properties and are not arbitrary.

#### Unidimensionality

Any phenomenon can be characterized by many different properties. In the construction of a variable we identify a single property that can be mapped on a *single real number line*, which forms the property continuum. When this mapping on a single real

number line is possible, the variable is unidimensional. If we consider more than one variable at a time, each will have a value on a different single real number line and the analysis is multidimensional.

#### Differences of Degree and Differences of Kind

Only when our measurement is unidimensional can comparisons of units of analysis be made in terms of degree to which the property is possessed. When the difference between units of analysis is not one of degree, it is one of kind. Unless one can be reasonably certain that the observations are all of one kind, comparisons cannot be said to be comparisons of degree, and the measure lacks validity. When the set of observations constituting the measure are unidimensional, they are all of the same kind. Further, when a measure is unidimensional, it possesses the characteristics of concatenation, invariant comparison, and group invariance.

A set of observations that are unidimensional, and thus have single real number line values, can be concatenated or linked together with arithmetic operations since the observations have (a) real rather than arbitrary values and (b) are all of the same kind. These real number values are possible only by knowing the location of the observation on the single real number line constituting the measurement continuum. The scores produced by a measurement can only be a function of the degree of the property they represent and no other property of the object or person being measured.



When we construct a measurement, each observation must remain stable in its value on the real number line regardless of what or who is being measured. The value of the observation must therefore be group (e.g., age, gender, ethnicity) invariant or sample free. When a measure does not have group invariance, it lacks measurement validity.

### Item-Free Person Measurement

Items or empirical observations used to generate a score indicating the amount of the property of interest must be capable of measuring persons regardless of what particular subset of items is being used. If, in fact, items are located at reliably known points on the single real number line, a person score can be generated regardless of which specific items are used. It is item-free person measurement and person-free item calibrations that define fundamental measurement (Andrich 1988).

### THE MEASUREMENT MODEL

The analysis uses the Rasch measurement model (Rasch 1960/1980; Wright and Masters 1982; Andrich 1988). A Rasch analysis provides precise examination of the extent to which a measure possesses the elements described above. In its most simple form the Rasch model assumes that all items in a measure have the same underlying structure both across individual respondents and across the underlying single real number line continuum. This underlying structure is that the probability of responding in a certain manner to an item is a

function of the overall score across all items. The central mathematical operation in the Rasch model is the odds ratio of responding in a certain manner to an item given a total score computed from the response to all other items in the measure.

Individuals with high total scores should have a specific probability of response to items indicating a high score that is different from the probability of response to items indicating a low score for those individuals with low total scores. The value or location of an item and/or a case on the underlying continuum is thus defined by its associated probability. The analysis in this chapter is conducted using the Quest computer program (Adams and Siek-Toon 1993) from the Australian Council for Educational Research. The Rasch model used by Quest is applicable to ordered category response data and is a generalized form of the Masters (1982, 1988) partial credit model (Wright and Masters 1982). Formally stated, the Rasch model for ordered category responses is that the response of person  $n$  to item  $i$  is represented by item score  $X_{ni}$ . This score may take any integer value from 0, . . . ,  $m_i$ . The Rasch model describes the probability of observing a particular score  $x_{ni}$  as

$$P(X_{ni} = x_{ni}) = \frac{\exp \sum_{j=0}^{x_{ni}} w_{ij} (\beta_n - \delta_i - \tau_{ij})}{\sum_{k=0}^{m_i} \exp \sum_{j=0}^k w_{ij} (\beta_n - \delta_i - \tau_{ij})}$$

where  $\beta_n$  is the degree of self-esteem of person  $n$ ,  $w_{ij}$  is the unit value assigned to response category  $j$  of item  $i$ , and  $\delta_i$  and  $\tau_{ij}$  represent the calibration of item  $i$ .<sup>1</sup> In Quest, item parameters are estimated with a joint (UCON) maximum likelihood procedure, with a correction factor  $(L-1/L)$  applied after convergence (Adams and Siek-Toon 1993). In all analyses convergence criteria for both case and item estimates are 0.005.

### RASCH MODEL STATISTICAL ANALYSIS

The extent to which a set of items conforms to the Rasch model criteria of adequate measurement is statistically assessed in this analysis by the following elements: item locations or calibrations on the underlying continuum, item precision, continuum coverage, reliability and separation of items and cases, goodness of fit, and group invariance.

#### Item Locations or Calibrations on the Underlying Continuum

An adequate measure consists of items located along the full range of a single construct continuum. These item calibrations or locations specify the scale value of the item and define the hierarchical order of the items on the continuum. The calibrations are expressed as *logits* (Ludlow and Haley 1995). Since the purpose of an item is to provide information about persons, the logit for an item is the performance level of an item relative to the performance level on the total set of items and total set of persons. This analysis is conducted for each individual in the sample, and the logits are averaged

(arithmetic mean) across all respondents. These mean logits thus indicate the average location of an item for all individuals. Logits can be calculated for each item and each response category for each item. The logits are thus true interval values generated out of clearly ordinal response categories.

In this analysis the Rasch partial credit model for ordered categories (Masters 1982) is used. The response category logits for each item are in the form of thresholds (Masters 1988). The threshold for a response category is the numerical amount required for an individual to have a 50 percent chance of responding positively to that item-response option and is thus analogous to Thurstonian thresholds (Masters 1988).

#### Item Precision

The standard errors of item or item-response category calibrations (logits) indicate the precision of the item calibration across all respondents and thus the precision of the item location on the underlying continuum.

<sup>1</sup> The model can be written as a single expression by defining

$$\sum_{j=0}^0 w_{ij}(\beta_n - \delta_i - \tau_{ij}) \equiv 1$$

and for identification, the following constraints are applied:

$$\sum_{j=0}^{m_i} \tau_{ij} \equiv 0 \text{ and } \sum_{i=1}^I \delta_i \equiv 0$$

### Continuum Coverage

Once calibrated, item-response categories may be examined for their location along the underlying continuum. An adequate measure consists of items that cover the full range of the continuum (logits generally range from  $-4$  to  $+4$ ). Several adjacent locations on the trait continuum for which there are no item-response categories constitute gaps in the measurement and should be minimized.

### Reliability and Separation of Items and Cases

The reliability of the items is the proportion of observed item variance not due to estimation error. The reliability of the cases is the proportion of observed sample variance not due to measurement error. Item separation is the extent to which items are separated on the construct continuum and may be expressed as the number of statistically distinct levels of the variable found in the items. Case separation is the extent to which the cases in the sample are separated on the variable and is expressed as the number of statistically distinct levels of the variable found in the sample (Wright and Masters 1982; Wright 1996). Separation for either items or cases is defined by item or case reliability estimates as

$$\sqrt{\frac{\text{Reliability}}{1 - \text{Reliability}}}$$

### Goodness of Fit

The fit of the data to the model is assessed by item fit tests indicating the

degree to which the response pattern (across all respondents) fits the expectations of the model. The fit of an item is evaluated by the *infit* (information-weighted fit) statistic. An *infit* mean square value of 1.0 indicates that the observed response pattern is the expected response pattern under the model. An *infit* mean square of  $1 + x$  indicates  $x$  percent more variation (residual) between the observed response pattern and the response pattern predicted by the model. Positive *infit* values are thus  $1 + x$  percent higher than expected by the model. Positive *infit* occurs because (a) the item is not measuring what is measured by the other items or (b) the item lacks clarity and is differentially interpreted by respondents. Positive *infit* values indicate unmodeled noise in the measure and therefore represent a challenge to unidimensionality, and thus the validity of the measure.

An *infit* of  $1 - x$  indicates less variation between the model predicted and observed response patterns than would be expected by the model (Adams and Sick-Toon 1993). Negative *infit* values occur because the item is redundant with other items and thus does not identify content of the variable not identified by other items. Negative *infit* values thus represent deficiency in the stochastic variability needed for useful measurement (cf. McNamara 1996, pp. 169-179).

Excessively large positive *infit* is of greater concern than excessively large negative *infit* because the former reveals invalidity, whereas the latter reveals only inefficiency. To define "excessively large" *infit*, mean square

values are converted to a standardized form (infit  $t$ ). A positive  $t$  results when the infit mean square is  $> 1.0$ ; a negative  $t$  results when the infit mean square is  $< 1.0$ . Misfit is defined here as  $t = +/- 2.0$  standard deviations from model expected fit. It is important to emphasize that the fit of data to a model is always a matter of degree. Not only is a perfect fit very unlikely, but the final decision as to an adequate fit must be made by each user of the data in terms of the context of the intended use and how much accuracy is desired. Although these are the generally accepted criteria, the fit criteria used here merely serve as an unambiguous standard for decision making.

### Group Invariance

A central requirement of a measure (under any model) is that it must perform the same mathematically regardless of other attributes of the thing being measured. When we identify groups of units of analysis on the basis of one of these attributes, the location of the items on the measurement continuum must remain stable across groups. Group invariance is tested by the goodness of fit between the item calibrations for two or more groups of theoretical relevance in the use of the measure. In the analysis conducted for this chapter, group invariance tests are conducted by pairwise group comparisons of the standardized delta values for each item across gender and ethnic groups. When the variable defining group membership consists of more than two categories, a series of pair-

wise comparisons of goodness of fit are conducted.

Given the multiple number of comparisons for the group invariance tests examined later in this chapter, it should be noted that invariance as a necessary characteristic of a measure was recognized by both Thurstone and Thorndike (see Englehard 1991, 1992), but their concerns were never institutionalized into listed measurement standards in their field of psychology. Moreover, discussions of invariance in "classical" measurement approaches are centered on factor structure invariance, which is not adequate for evaluating the kinds of responses of interest in this chapter since the factor structure cannot be sample free. Thus, the Rasch approach is the only measurement model in which invariance is a central, routine, and appropriate part of the analysis.

## METHOD AND PROCEDURES

### PARTICIPANTS

Data for this Rasch model analysis were collected from school records and self-report surveys between the summer of 1989 and the winter of 1991 from three middle school and secondary school adolescent groups composed of self-identified Anglos, American Indians, and Hispanics. The participant pool consisted of youth who were in good academic standing in school (GAS), those who were academically "at risk" (AR), and those who had dropped out of school (DO) and had been out for at least 1 month. Data were collected from

six sites in the western and southwest-ern parts of the United States.

A total of 3,986 adolescents completed the survey form. Sample sizes for each ethnic group varied according to gender and academic status, as follows: Anglos = 1,119 (571 males and 548 females, with an overall mean age of 16.7 and a standard deviation of 1.1); American Indian = 767 (342 males and 425 females, with an overall mean age of 16.5 and a standard deviation of 1.6); Hispanics = 2,100 (1,180 males and 920 females, with an overall mean age of 16.5 and a standard deviation of 1.2). Sample sizes for each of the academic status conditions were as follows: Anglos, GAS = 355, AR = 325, and DO = 439; American Indians, GAS = 243, AR = 255, and DO = 269; and Hispanics, GAS = 635, AR = 691, and DO = 774.

### MATERIALS

The survey was a multiple-scale instrument developed by the staff at the Tri-Ethnic Center for Prevention Research at Colorado State University, using scales that had been developed for previous studies. There were more than 1,000 items in the survey, and it took between 60 and 90 minutes to complete. A seven-item self-esteem scale was selected for use in the measurement analysis. The short scale consisted of the following items: "I like myself," "I am good at games," "I am good looking," "I am lucky," "I am proud of myself," "I am intelligent," and "I am able to do things well."

Self-esteem scale items initially were treated with the usual correlational statistical routines to determine

their psychometric properties. Cronbach's alpha ranged from 0.78 to 0.85 for each of the three ethnic groups and all groups combined. A principal components factor analysis produced two factors, with the first factor accounting for 68 percent of the variance. Both sets of findings gave the researchers at the Tri-Ethnic Center for Prevention Research considerable confidence in the reliability of the self-esteem items; consequently, the scale has been used in several studies concerning AOD use among ethnic populations.

### PROCEDURE

Data for the school-based population were collected during school hours; data for the DO sample were collected at different times of the day depending on the availability of the participant. Survey questionnaires were identified by number only. Upon completion of the survey and in the presence of the field researcher, the survey was sealed in an envelope and immediately mailed in for data entry and processing. Respondents were paid \$10 for their participation.

All participants were assured of confidentiality and were asked to sign a "consent to participate agreement" describing the rights and responsibilities of participation; parent consent was obtained for participants under the age of 18. Participants were informed that the survey itself and answers to the survey questions were protected by the U.S. Government's issue of a certificate of confidentiality that guarantees the legal confidentiality of all survey responses.

## RESULTS

As indicated earlier in the chapter, this analysis was conducted using the Quest computer program (Adams and Sick-Toon 1993) from the Australian Council for Educational Research. Quest typically is used to construct and validate variables based on dichotomous and polychotomous observations such as Likert-type ordinal scales. The Quest (version 2.1) software program provides Rasch analysis item estimates, case estimates, and fit statistics. Results from our analysis of the self-esteem scale are first presented for the total sample; we then present comparisons by ethnic group, by gender (across all ethnic groups), and finally by ethnicity-gender.

## TOTAL SAMPLE

## Item Calibrations, Precision, Continuum Coverage, and Separation

As shown in figure 1, the seven items with four response categories fail to maintain response category order across all seven items. The "like self" response "some" has a higher scale value than the "good-looking" response "a lot." With this one exception, the items also maintain their relative scale value order across the three calibrated response categories. The range of scale values is less than ideal, with logit values from  $-2.78$  to  $2.04$ . The truncating of "self-liking" is con-

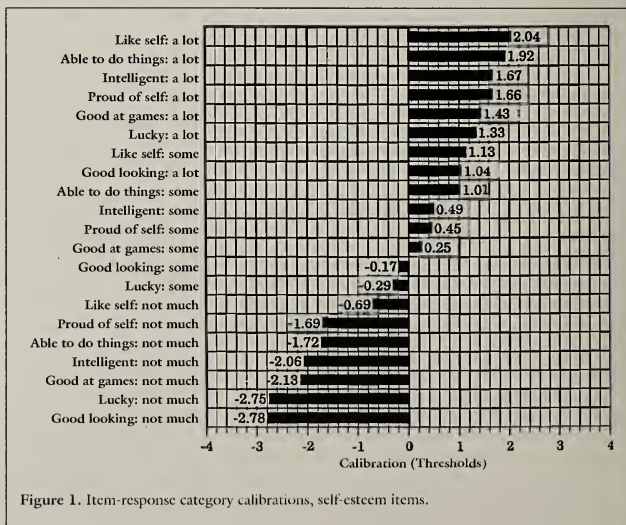


Figure 1. Item-response category calibrations, self-esteem items.

siderably greater at the high self-esteem end of the continuum. It is also apparent that several item-responses share essentially the same location on the continuum. Additionally, the lower end of the scale contains two major gaps in the construct continuum (between "like self: some" and "proud of self: some;" between "good at games: some" and "lucky: some"). Overall, the seven items are not particularly efficient in providing information about adolescent self-esteem.

The item scale values indicate that there are too many items, because some items occupy the same continuum location. In addition to this problem, there are gaps in the continuum and a truncated range of self-esteem scores. Regardless of these problems, the items statistically iden-

tify five levels of self-esteem with an item reliability of 0.96. This level of identification, however, is based on all seven items. Final assessment of item separation depends on only those items having acceptable fit.

#### Item Fit

As shown in table 1, only two of the seven items have acceptable fit with the model. "Good at games" and "lucky" have very high positive *infit t* values, indicating that they are not on the same dimension as the other five items. This is not unexpected, since "good at games" probably reflects athletic ability and "lucky" has no self-evident relationship to positive self-esteem. "Proud of self," "intelligent," and "able to do things" have excessively high negative *infit t* values,

Table 1. Item-Response Category Calibrations, Precision, and Fit, Total Sample.

Item	Scale Value	Response Category			Infit Mean Square	Infit <i>t</i>
		Not Much	Some	A Lot		
Like self	Logit	-0.69	1.13	2.04	0.95	-1.5
	SE	0.06	0.13	0.17		
Good at games	Logit	-2.13	0.25	1.43	1.24	8.2
	SE	0.06	0.09	0.13		
Good looking	Logit	-2.78	-0.17	1.04	0.99	-0.6
	SE	0.09	0.07	0.09		
Lucky	Logit	-2.75	-0.29	1.33	1.21	7.8
	SE	0.06	0.07	0.09		
Proud of self	Logit	-1.69	0.45	1.66	0.81	-7.5
	SE	0.06	0.11	0.12		
Intelligent	Logit	-2.06	0.49	1.67	0.92	-3.0
	SE	0.06	0.09	0.13		
Able to do things	Logit	-1.72	1.01	1.92	0.86	-5.0
	SE	0.06	0.12	0.16		

Note: SE = standard error.

indicating that they provide no information not already provided by the other items. The two items having acceptable fit are "like self" and "good-looking," with the latter item defining the construct. Since those items other than "lucky" and "good at games" have face validity in the context of self-esteem measurement, it appears that the perception and assessment of one's physical appearance (i.e., "like self" and "good-looking") are central to adolescent self-esteem.

### ETHNIC GROUP COMPARISONS

#### Item Characteristics: Anglos

Item fit by ethnic group is shown in table 2. Among Anglo adolescents only "good looking" and "intelligent" have acceptable fit. "Good at games" and "lucky" are, not unexpectedly, off dimension. "Like self," "proud of self," and "able to do things" are redundant items. Therefore, among Anglo adolescents self-esteem consists of considering oneself "intelligent" and "good-looking." The items have relatively low reliability (0.82), resulting in the identification of only two levels of self-esteem (separation = 2.13).

#### Item Characteristics: American Indians

Among American Indian adolescents, again only two items have acceptable fit, and in this case the items are "like self" and "good looking." "Good at games" and "lucky" again are off dimension, and "able to do things," "intelligent," and "proud of self" are all redundant. Thus, what constitutes the

central ingredients of self-esteem is somewhat different than for Anglo adolescents. In this case, the reliability of the items is slightly improved over that of Anglos (0.88), but still only two levels of self-esteem are statistically identified (separation = 2.71).

#### Item Characteristics: Hispanics

Among Hispanics three items have acceptable fit: "like self," "good-looking," and "intelligent." "Lucky" and "good at games" are again off dimension, and "proud of self" and "able to do things" are redundant. It thus appears that the intention of those who developed the self-esteem scale is most nearly realized among Hispanic adolescents, since self-esteem is defined by those attributes important for both Anglos and American Indians. Moreover, reliability is considerably higher among Hispanics (0.92), resulting in the identification of three levels of self-esteem (separation = 3.39).

Clearly, the components of self-esteem differ by ethnicity, and this particular set of self-esteem items works best among Hispanic adolescents.

#### Group Invariance

To test for invariance in item location across the three ethnic groups, pairwise item invariance tests were conducted. In this test each item logit ( $\delta$ ) was computed for each ethnic group, and the goodness of fit of the pairs of item calibrations was tested by a chi-square. Alpha was set at 0.01 because a large number of comparisons were conducted. As shown in table 3, the greatest invariance exists



Table 2. Item-Response Category Calibrations, Precision, and Fit by Ethnicity.

Item	Scale Value	Response Category			Infit Mean Square	Infit <i>t</i>
		Not Much	Some	A Lot		
<b>Anglo</b>						
Like self	Logit	-1.19	0.95	2.27	0.88	-2.2
	SE	0.19	0.23	0.40		
Good at games	Logit	-2.19	0.12	1.41	1.28	4.7
	SE	0.16	0.20	0.23		
Good looking	Logit	-2.91	-0.07	1.09	0.95	-0.8
	SE	0.16	0.18	0.21		
Lucky	Logit	-2.78	-0.17	1.20	1.24	4.2
	SE	0.16	0.18	0.21		
Proud of self	Logit	-2.19	0.28	1.70	0.77	-4.5
	SE	0.16	0.20	0.28		
Intelligent	Logit	-1.88	0.77	1.87	0.95	-0.9
	SE	0.13	0.22	0.33		
Able to do things	Logit	-1.88	1.25	2.38	0.87	-2.4
	SE	0.19	0.28	0.41		
<b>American Indian</b>						
Like self	Logit	-0.56	1.34	2.23	0.93	-1.0
	SE	0.16	0.29	0.35		
Good at games	Logit	-2.31	0.39	1.72	1.33	5.4
	SE	0.19	0.18	0.23		
Good looking	Logit	-3.13	-0.37	1.07	1.02	0.3
	SE	0.16	0.16	0.20		
Lucky	Logit	-3.06	-0.36	1.53	1.27	4.7
	SE	0.19	0.16	0.22		
Proud of self	Logit	-1.44	0.46	1.79	0.78	-4.3
	SE	0.16	0.20	0.25		
Intelligent	Logit	-2.47	0.37	1.62	0.81	-3.5
	SE	0.16	0.19	0.25		
Able to do things	Logit	-1.88	1.13	2.02	0.83	-2.9
	SE	0.19	0.24	0.32		
<b>Hispanic</b>						
Like self	Logit	-0.56	1.13	1.88	0.98	-0.4
	SE	0.13	0.18	0.22		
Good at games	Logit	-2.06	0.24	1.36	1.19	4.8
	SE	0.13	0.12	0.13		
Good looking	Logit	-2.63	-0.16	1.02	0.99	-0.2
	SE	0.13	0.12	0.13		

Table 2. *Continued*

Item	Scale Value	Response Category			Infit Mean Square	Infit <i>t</i>
		Not Much	Some	A Lot		
<i>Hispanic Continued</i>						
Lucky	Logit	-2.69	-0.31	1.28	1.18	4.9
	SE	0.13	0.10	0.14		
Proud of self	Logit	-1.63	0.52	1.60	0.83	-4.8
	SE	0.13	0.13	0.17		
Intelligent	Logit	-2.03	0.44	1.62	0.95	-1.2
	SE	0.09	0.15	0.18		
Able to do things	Logit	-1.63	0.89	1.75	0.87	-3.3
	SE	0.09	0.18	0.21		

Note: SE = standard error.

between Hispanics and American Indians, where only "good-looking" has a significantly different scale value. Seeing self as "good-looking" indicates more self-esteem for Hispanics than for American Indians. Three items have significantly different scale values between Anglos and American Indians. "Like self" and "proud of self" have higher scale values for American Indians, and "intelligent" has a higher scale value for Anglos. Three items are also significantly different between Anglos and Hispanics. "Proud of self" has a higher scale value for Hispanics, and "intelligent" and "able to do things" have higher scale values for Anglos.

It is important to note that scale values represent the interval value of the difficulty or group salience of the item. (Difficulty, in this case, has to do with an item's relationship to other

items and other persons. It implies that a respondent has "difficulty" endorsing an item or set of items.) Thus, endorsing "good-looking" is more difficult for American Indians than it is for Hispanics; endorsing "like self" and "proud of self" is more difficult for American Indians than for Anglos; endorsing "intelligent" is more difficult for Anglos than for either American Indians or Hispanics; and endorsing "proud of self" is more difficult for Hispanics than Anglos.

#### GENDER COMPARISONS ACROSS ALL ETHNIC GROUPS

##### Item Characteristics: Males

Item fit by gender is shown in table 4. For males three of the seven items have acceptable fit ("like self," "good looking," "intelligent"). "Good at games" and "lucky" are not on the

Table 3. Tests of Group Invariance of Items by Ethnicity.

	Scale Values <sup>a</sup> By Ethnicity			Comparisons ( $\chi^2$ )		
	Anglo	American Indian	Hispanic	Anglo vs. American Indian	Anglo vs. Hispanic	American Indian vs. Hispanic
Like self	0.68 (0.07)	0.99 (0.07)	0.80 (0.05)	9.62 *	2.25	4.59
Good at games	-0.22 (0.06)	-0.07 (0.06)	-0.16 (0.04)	2.95	0.69	1.45
Good looking	-0.63 (0.06)	-0.81 (0.06)	-0.58 (0.04)	4.50	0.48	10.36*
Lucky	-0.58 (0.06)	-0.63 (0.06)	0.57 (0.04)	0.30	0.02	0.63
Proud of self	-0.08 (0.06)	0.26 (0.06)	0.16 (0.04)	14.88*	9.86*	2.00
Intelligent	0.25 (0.07)	-0.16 (0.06)	0.02 (0.04)	19.20*	8.61*	5.63
Able to do things	0.58 (0.07)	0.43 (0.07)	0.34 (0.04)	2.41	8.40*	1.14

<sup>a</sup> Delta values, standard error in parentheses.

\* $p < 0.01$ .

self-esteem dimension, and "proud of self" and "able to do things" are redundant. The reliability for the items is sufficiently high (0.92), resulting in the identification of three levels of self-esteem (separation = 3.34).

#### Item Characteristics: Females

As shown in table 4, only two of the items have acceptable fit for females ("like self" and "good-looking"). It is more than noteworthy that self-esteem for females is best defined by physical appearance, since "good-looking" has perfect fit with the model. "Good at games" and "lucky" are again not part of self-esteem, and "proud of self," "intelligent," and "able to do things" are redundant. The items have relatively high reliability for females (0.93), and thus three levels of self-esteem are again statistically identifiable (separation = 3.69).

#### Group Invariance

Group invariance tests by gender are shown in table 5. Three of the seven items have significantly different scale values for males and females. "Good at games" and "good-looking" have significantly higher scale values for males, and "able to do things" has a higher scale value for females. It is more difficult for males to see themselves as good at games and as good-looking. It is more difficult for females to see themselves as able to do things as well as others.

#### ETHNICITY-GENDER COMPARISONS

##### Ethnic Differences Among Males

Among males the fit of the items is very similar for Anglos and Hispanics (table 6). In both groups "lucky" and

“good at games” are off dimension, and “proud of self” is redundant. Among Hispanics, however, “able to do things” is also redundant, while among Anglos this item has acceptable fit. Among American Indian males “good at games” and “lucky” are off dimension, and “able to do things” and “intelligent” are redundant. These differences have important implications for the measurement of adolescent self-esteem. While seeing

Table 4. Item-Response Category Calibrations (Thresholds), Precision, and Fit by Gender.

Item	Scale Value	Response Category			Infit Mean Square	Infit <i>t</i>
		Not Much	Some	A Lot		
<b>Males</b>						
Like self	Logit	-0.50	1.09	1.77	0.99	-0.2
	SE	0.13	0.20	0.21		
Good at games	Logit	-1.72	0.48	1.28	1.19	4.4
	SE	0.09	0.13	0.17		
Good looking	Logit	-2.69	-0.14	1.19	0.98	-0.6
	SE	0.09	0.13	0.14		
Lucky	Logit	-2.75	-0.31	1.24	1.19	5.1
	SE	0.09	0.11	0.12		
Proud of self	Logit	-1.59	0.47	1.47	0.83	-4.5
	SE	0.09	0.15	0.16		
Intelligent	Logit	-2.00	0.42	1.52	0.95	-1.4
	SE	0.13	0.13	0.17		
Able to do things	Logit	-1.56	0.87	1.65	0.88	-3.0
	SE	0.09	0.16	0.20		
<b>Females</b>						
Like self	Logit	-0.94	1.16	2.33	0.94	-1.6
	SE	0.13	0.16	0.24		
Good at games	Logit	-2.69	0.03	1.58	1.32	7.6
	SE	0.13	0.13	0.17		
Good looking	Logit	-2.84	-0.22	0.94	1.00	0.0
	SE	0.13	0.09	0.14		
Lucky	Logit	-2.75	-0.25	1.42	1.22	5.5
	SE	0.13	0.12	0.12		
Proud of self	Logit	-1.81	0.43	1.85	0.79	-6.0
	SE	0.13	0.13	0.20		
Intelligent	Logit	-2.16	0.58	1.86	0.87	-3.3
	SE	0.13	0.13	0.19		
Able to do things	Logit	-1.91	1.19	2.23	0.83	-4.1
	SE	0.13	0.16	0.24		

Note: SE = standard error.

Table 5. Tests of Group Invariance of Items by Gender.

Item	Males <sup>a</sup>	Females <sup>a</sup>	$\chi^2$
Like self	0.78 (0.05)	0.85 (0.05)	1.15
Good at games	0.00 (0.04)	-0.35 (0.04)	34.42*
Good looking	-0.55 (0.04)	-0.71 (0.04)	8.38*
Lucky	-0.62 (0.04)	-0.52 (0.04)	2.63
Proud of self	0.10 (0.04)	0.16 (0.04)	0.83
Intelligent	-0.02 (0.04)	0.09 (0.05)	3.01
Able to do things	0.31 (0.04)	0.50 (0.05)	8.15*

<sup>a</sup>Scale values are deltas.\* $p < 0.01$ .

Table 6. Item Fit by Gender and Ethnicity.

Item	Males			Females		
	Anglo	Hispanic	American Indian	Anglo	Hispanic	American Indian
Life self						
Mean square	0.90	1.01	0.98	0.89	0.96	0.91
Infit $t$	-1.1	0.2	-0.1	-1.6	-0.7	-1.1
Good at games						
Mean square	1.20	1.14	1.38	1.37	1.29	1.34
Infit $t$	2.3	2.6	3.4	4.5	4.8	4.2
Good looking						
Mean square	0.97	0.99	0.95	0.96	0.99	1.07
Infit $t$	-0.4	-0.1	-0.6	-0.5	-0.1	1.0
Lucky						
Mean square	1.27	1.15	1.23	1.16	1.22	1.28
Infit $t$	3.3	3.3	2.8	2.0	3.8	3.8
Proud of self						
Mean square	0.74	0.86	0.85	0.82	0.78	0.74
Infit $t$	-3.6	-2.8	-1.8	-2.5	-4.2	-4.0
Intelligent						
Mean square	0.99	0.96	0.82	0.92	0.90	0.79
Infit $t$	-0.1	-0.8	-2.1	-1.1	-1.7	-3.0
Able to do things						
Mean square	0.92	0.89	0.81	0.84	0.84	0.83
Infit $t$	-0.9	-2.2	-2.1	-2.2	-2.6	-2.1

Note: Item scale values are deltas.

oneself as intelligent is an important self-esteem item for Anglo and Hispanic males, it is not uniquely important for American Indian males. While ability to do things as well as others is an important self-esteem item for Anglos, it is not uniquely important for Hispanics or American Indians. "Proud of self" is not a unique self-esteem component for Anglos and Hispanics, but it is marginally so for American Indians.

#### **Ethnic Differences Among Females**

For females all seven items have the same fit characteristics for Anglos and Hispanics. "Good at games" and "lucky" are off dimension, and "proud of self" and "able to do things" are redundant. Among both Anglo and Hispanic females self-esteem is defined by seeing oneself as good-looking, liking oneself, and seeing oneself as intelligent. Among American Indian females the fit pattern is very similar to that of Anglos and Hispanics, with the exception that "intelligent" is redundant and thus not a unique element of self-esteem.

#### **Comparing Gender Within Ethnic Groups**

With regard to item fit, Anglo males and females are the same except for "able to do things," which is redundant for females but is a unique element of self-esteem for males. Hispanic males and females are nearly identical; and among American Indians the two genders also are nearly identical. For American Indians, "proud of self" is clearly redundant

for females and marginally so for males. Thus, the only gender difference in items composing self-esteem is among Anglos, where ability to do things as well as others is a unique self-esteem component for males but not females. In summary, testing for gender differences within ethnicity reveals only one item having a significantly different scale value by gender among Anglos and Hispanics.

#### **Group Invariance: Crossing Gender and Ethnicity**

Group invariance was examined across all gender and ethnicity groups to evaluate the importance of "ethgender" in self-esteem measurement. This analysis does not include "good at games" or "lucky" because in all gender and ethnic group combinations these two items were not part of the self-esteem dimension. Results of the group invariance tests are shown in table 7.

Among Anglos "like self" has a higher scale value for females. Among American Indians "able to do things" has a higher scale value for females. Among Hispanics none of the five items differs in scale value by gender. Among males "intelligent" has a higher score value for Hispanics than for Anglos or American Indians, and "intelligent" has a higher scale value for Anglos than for American Indians. However, "like self" has a higher scale value for American Indians than for Anglos and Hispanics (see table 3). Among females, "proud of self" has a higher scale value among Hispanics and American Indians than among Anglos; but Hispanic and American

Table 7. Items With Significantly Different ( $p < 0.01$ ) Scale Values for Gender-Ethnicity Pairs.

	Anglo Males	Anglo Females	Hispanic Males	Hispanic Females	American Indian Males
Anglo Females	1:F > M	-	-	-	-
Hispanic Males	6:H>A	7:A>H 5:H>A	-	-	-
Hispanic Females	1:H>A	5:H>A	none	-	-
American Indian Males	1:N>A 6:A>N	7:A>N 5:N>A 6:A>N	1:N>H 6:H>N	6:H>N	-
American Indian Females	1:N>A 3:A>N	5:N>A	7:N>H 3:H>N	none	7:F>M

Note: F = female; M = male; A = Anglo; H = Hispanic; N = American Indian.

Indian females do not differ in the scale value of any of the five items.

## CONCLUSIONS AND DISCUSSION

The results of the analysis have several implications for researchers interested in using survey-type scales for the comparison of individuals from different cultural or ethnic groups. Moreover, the results indicate that there are considerable differences in the way gender and ethnic status influence responses to a common set of self-esteem items. The broad implications for the Rasch analysis findings and its relationship to measurement equivalence are not clear and, thus, merit further investigation.

It is not surprising that there is a considerable amount of disagreement in the research on ethnic differences in self-esteem (see Martinez and Duker 1987, 1991; Schroeder et al.

1993; Moore et al. 1996). Clearly, self-esteem measurement involves appreciably more than summing up responses to a set of questions having face and content validity. Our gender and ethnicity analyses indicate that most of the rather standard self-esteem items are redundant and thus not unique contributors to determining levels of self-esteem. Setting gender and ethnicity differences aside, it is clear from our findings that physical appearance plays a central role in adolescent self-esteem.

When we turn to measuring self-esteem for adolescents from different ethnic groups, the measurement of self-esteem becomes more complicated. Among Anglo adolescents, self-esteem is defined by intelligence and physical appearance. Among American Indian adolescents, self-esteem is defined by liking oneself and physical appearance. Among Hispanic adolescents, self-esteem is defined by liking

oneself, intelligence, and physical appearance. Clearly, what attributes constitute the central elements of self-esteem differ considerably by ethnicity, and any measure not taking this fact into consideration lacks construct validity.

The importance of evaluating the measurement of self-esteem by ethnicity is readily apparent in item invariance across ethnic groups. Recall that Rasch measurement approaches measure differences—differences between persons, between items, and between persons and items—hence, the invariance property is important in understanding outcomes. Any measure of self-esteem that fails to have item invariance across ethnic groups contains built-in bias in self-esteem scores for the different groups. These findings strongly suggest that the current measurement of self-esteem contains a considerable amount of ethnic group bias, and thus lack of construct validity. Not unexpectedly, item invariance is greatest for the two ethnic minority groups and greatest for Anglos compared with American Indians and Hispanics.

The analysis of group invariance of self-esteem items also provides important information about ethnic difference in self-esteem. Endorsing “like self” and “proud of self” is more difficult for American Indians than for Anglos, and endorsing “proud of self” is more difficult for Hispanics than for Anglos. On the other hand, endorsing “intelligent” is more difficult for Anglos than for either Hispanics or American Indians. Between the two minority groups, endorsing “good-looking” is more difficult for Hispanics than for American Indians. The numerous dif-

ferences in scale value location of what are generally considered indicators of self-esteem emphasize the need for extreme caution in merely summing scores across a set of items and comparing the means of different ethnic groups. Such an exercise will almost invariably result in incorrect conclusions regarding ethnic differences in self-esteem. More than that, though, the exercise probably violates differences in measurement equivalence.

Gender findings add more complications to self-esteem measurement that at least partially contribute to the confusion regardless of gender differences in self-esteem. For males, the attributions “like self,” “good looking,” and “intelligent” uniquely contribute to the measurement of self-esteem, and “like self” and “good looking” define the self-esteem construct. Such attributions as “able to do things” and “proud of self” are redundant with the above attributions. Among females, however, only the attributions “like self” and “good looking” uniquely indicate level of self-esteem, and “good-looking” clearly defines the self-esteem construct. The attributions of “intelligence,” “ability,” and “pride” are redundant with “liking oneself” and, more pointedly, “physical appearance.” Turning to item invariance, results further reveal the difficulty in merely creating summated scores by gender. It is more difficult for males than females to see themselves as “good-looking,” and it is more difficult for males than females to see themselves as “able to do things.”

Problems associated with measuring self-esteem are further compli-



cated by the finding that the components, defining elements, and scale value weights of self-esteem items differ by combinations of ethnicity and gender. The finding suggests that the two variables interact in ways that invite further research and analysis in the domain of ethnicity.

In this chapter, ethnicity was treated as a nominal variable where respondents self-identified their ethnic affiliation. Data are available from the project to determine the depth and degree of ethnic identity for the respondents. Within each ethnic group, disaggregated analyses can be performed to determine if the degree to which respondents identify with their self-identified group will create yet another subset of scale items measuring self-esteem (see Trimble 1995). Analyses of combinations by degree of ethnic identity within gender groups may assist researchers in discovering the extent to which each of the sets interact and covary and in further understanding the dynamics associated with studies of the self-esteem. Moreover, it may be that people from specific tribes who are marginally acculturated may view the self-esteem construct very differently than someone from another tribe who shares the same level of acculturative status; the combinations of different statuses and tribal affiliations are staggering and stretch the imagination.

Researchers interested in measuring self-esteem and using scales with ethnic and cultural groups are encouraged to include indigenous (*emic*) items and closely follow the standards associated with measurement and cultural equiva-

lence. Additionally, it is hoped that the findings produced by the Rasch analysis will encourage researchers to use the approach to analyze scales designed for use with ethnic and cultural groups. More important, it is hoped that the use of Rasch analysis will lead to new insights concerning culturally unique psychosocial processes not available through use of the usual psychometric procedures.

Finally, many American Indian communities continue to believe that levels of self-esteem in youth are related to AOD use. However, some of the research on the topic fails to support these beliefs. Perhaps there is a difference between the way researchers conceptualize the self construct and the way it is viewed in many Indian communities; to assess self-esteem, for example, many researchers continue to use variations of Rosenberg's self-esteem scale. Is Rosenberg's theory of self-esteem culturally equivalent to Indian worldviews? Is it culturally equivalent to tribal and band-specific worldviews? If there are differences between the worldviews, would it be possible to develop scientifically sound measures to tap the self-esteem that would permit culturally equivalent comparisons? To collect the information necessary to respond to the worldview equivalent, researchers should use quantitative research analysis techniques. The technique and the research must be conducted in close collaboration with Indian participants who are deeply grounded in their respective tribal lifeways and thoughtways. Answers to measurement and scale construction questions cannot be obtained until this process is completed.

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## Chapter 10

# Alcohol in the Lives of Indian Women

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*KEY WORDS: Native American; female; AOD (alcohol or other drug) use behavior; AOD abuse; urban area; epidemiological indicators; spouse abuse; domestic violence; victimization; AODR violence; family cohesion; traditional society; cultural conflict*

Despite the importance of women in Indian families and communities, very little research has been reported on their use of alcohol relative to the amount of research on alcohol use among Indian men. One source of insight on the role of alcohol in the lives of Indian women, given the paucity of research, is in the writings of Indian women authors and in recently recorded life histories (Blackman 1982; Hale 1985; Powers 1986; Crow Dog and Erdoes 1990; Brave Bird and Erdoes 1993). These biographical and fictional approaches reveal a complex pattern of alcohol in the lives of Indian women. They also serve to illustrate the many demands and expectations con-

fronting Indian women in their roles as daughters, wives, mothers, and elders.

This chapter summarizes the available epidemiology on women's use of alcohol and explores what information is available regarding treatment for alcohol and other drug (AOD) misuse. Alcohol use by women during pregnancy and the issues of violence and abuse will not be included here, because these topics are addressed in chapters 13 and 16.

### ALCOHOL USE ON RESERVATIONS

Women's alcohol use was not specifically addressed in early community-based studies. Reviews of these studies

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show that many more Indian women were abstinent and fewer women misused alcohol than did Indian men. Early reports of Indian women's drinking (mainly among the Lakota peoples) showed that drinking women were generally not respected in their communities (Maynard 1969). Leland (1978) later corroborated this observation in her Nevada Indian colony study.

The first general tribal epidemiologic study was conducted by Whittaker among the Standing Rock Sioux in 1960-61 (Whittaker 1962, 1963). The survey, conducted with a random sample of 12 percent of the reservation population, yielded 208 respondents, "almost equally divided between males and females" (Whittaker 1962, p. 471; the specific number of respondents by gender is not given), ranging in age from 15 to 73. The data indicated that approximately 70 percent of Standing Rock Indians over the age of 14 used alcohol regularly. By gender, 82 percent of Indian men and 55 percent of Indian women reporting drinking, compared with 68 percent of Euro-American males and 50 percent of Euro-American females (Whittaker 1962; the Euro-American comparative data cited by Whittaker came from the "Drinking in Iowa" study reported by Mulford and Miller [1959]).

According to the study, 71 percent of Standing Rock women reported that most of their friends drank, so the frequency of drinking among women may have been higher than the 55 percent self-reported use. Drinking among Indian women tended to reach a peak at a later age than among Indian men. In the age

group 20-29, 99 percent of Indian men reported drinking, compared with 72 percent of Indian women. By ages 30-39, 85 percent of the women's sample reported drinking, while drinking by men was reported by 93 percent of the sample in this age group. Although a greater proportion of younger Indian women drank than did their Euro-American counterparts, the incidence of Indian women's drinking dropped substantially after age 40 (Whittaker 1962). Whittaker (1963) also noted that the most frequent shift from drinking to abstinence occurred in women following the birth of a child. He attributed this, in part, to his belief that Indian mothers had considerably more responsibility for the welfare of their children than did Euro-American mothers. He did not elaborate on this observation. Finally, a greater proportion of Indian males (29 percent) reported regular drinking than females (19 percent), while occasional drinking was reported by 53 percent of men versus 36 percent of women. Not surprisingly, Indian men consumed more alcohol during a drinking episode than did Indian women (Whittaker 1962).

Whittaker (1962) is one of the few researchers reporting a rough measure of quantity of alcohol consumed. Although only about 25 percent of the 208 respondents provided data on type and quantity of alcohol consumed, some interesting patterns are evident. A larger percentage of women reported drinking small or medium quantities of alcohol than did men, and more men reported drinking large quantities of

alcohol than did women. More women reported drinking wine and distilled liquor in small amounts than the men, while a greater proportion of men reported drinking beer, wine, and liquor in larger quantities than did the women. Table 1 summarizes the amounts reported as consumed in a single sitting by men and women in Whittaker's sample (1962).

Whittaker (1963) did not report symptoms of problem drinking, alcoholism, or alcohol-related problems by gender. However, he did note that there appeared to be a correlation between drunken behavior and violence. Women are often targets of domestic violence, usually associated with drunken behavior by the male. Behaviors that occurred while drinking were generally excused by others, and beating a wife while drunk was not seen as a problem by more than a third of respondents (Whittaker 1963). It was not until several years later that additional studies focused

on Indian spousal abuse, domestic violence, and victimization (White 1970; Brodribb 1988; Norton and Manson 1995; Fairchild et al. 1998; see also chapter 16 in this monograph). Yet nearly 40 years after Whittaker's observations, this is still an underinvestigated area (Lester 1999).

In 1966, Mail conducted a survey among Athabaskan-speaking peoples in central Arizona. Using local informants, all 4,418 reservation residents (2,401 women) ages 5-65+ were surveyed for alcohol use. Again, there was a greater prevalence of alcohol use by Indian men than by Indian women at all ages (Mail 1967). The drinking rates by gender in this population are summarized in table 2. Peak alcohol use occurred earlier for men, with 85 percent of men reporting some alcohol use at ages 25-34, followed by a slight decrease with advancing age. In comparison, 57 percent of women ages 25-34 reported using alcohol, with use increasing to nearly 60 per-

Table 1. Comparison of Amount of Alcohol Consumed by Standing Rock Sioux at Each Sitting, by Gender.

Amount Consumed <sup>a</sup>	Total % Reporting Consumption		% Beer Consumed		% Liquor Consumed		% Wine Consumed	
	M	F	M	F	M	F	M	F
	Small	23	35	27	41	17	24	8
Medium	21	27	30	29	13	15	8	0
Large	56	38	43	30	70	61	84	69

Note: See text for explanation of sample. M = male; F = female.

<sup>a</sup>Small = 1-2 bottles of beer, 1-2 drinks of liquor, or 1-2 glasses of wine; medium = 3-6 bottles of beer, 3-4 drinks of liquor, or 3-6 glasses of wine; large = 7+ bottles of beer, 5+ drinks of liquor, or 7+ glasses of wine. The measures "medium" and "large" would be considered "binge drinking" by today's standards, which define binge drinking as 5 or more drinks on one drinking occasion.

cent for ages 35–44, then dropping to 52 percent for ages 45–54. The proportion of women drinking was reported to increase slightly in ages 55–64 (54 percent) and age 65 and over (64 percent). No explanation was offered for the high prevalence of women drinkers in the oldest age group, and the subject of alcohol use by Indian elderly has received little attention in the research literature.

The survey conducted by Mail also addressed the question of problems related to drinking. Women in the age group 35–44 were reported to have more serious problems as a result of their drinking (18 percent) than women age 65 and over (10 percent), despite the fact that, proportionately, more women in the 65+ age group were reported drinking. The majority of women over age 65 were reported

to be occasional drinkers without problems, while nearly half of the women ages 35–44 were reported to have serious alcohol-related problems resulting from their drinking (Mail 1967).

To better understand Indian drinking behavior and perceptions about alcohol in their lives, Leland (1978) conducted a series of ethnographic interviews designed to elicit a folk taxonomy of alcohol use among 277 (134 female) Indian residents of a Nevada Indian settlement.<sup>1</sup> The study revealed a wide range of drinking behavior in the settlement, establishing five major drinking styles among men and five somewhat different drinking styles

<sup>1</sup> Leland strongly believed that "judgements about the nature and extent of problem drinking in any group should take some account of its [the group's] own drinking standards" (1978, p. 89).

Table 2. Percentage of Drinkers by Age Cohort and Gender on an Athabaskan-Speaking Reservation in Arizona in 1966.

Age	Female Drinkers			Male Drinkers		
	Female Population	Number	%	Male Population	Number	%
0-4	312	0	0.0	309	0	0.0
5-9	360	1	0.3	369	0	0.0
10-14	338	24	7.1	329	25	7.6
15-19	264	78	29.5	290	149	51.4
20-24	167	83	49.7	170	135	79.4
25-34	270	155	57.4	234	199	85.0
35-44	220	131	59.5	170	132	77.6
45-54	117	61	52.1	108	85	78.7
55-64	110	59	53.6	111	88	79.3
65+	72	46	63.9	95	71	74.7
Unknown	2	2	100.0	1	0	0.0
Totals	2,232	640	28.7	2,186	884	40.4

Note: Population numbers for each gender include individuals reporting never drinking as well as those who report use of alcohol.



practiced by women. Informants in both groups identified two major types of Indian drinkers: those who could "handle alcohol" and those who could "not handle alcohol." For the men, the classification of drinkers (and percentage in each category) who could handle alcohol included those who did not drink (22 percent), those who drank only on special occasions (20 percent), and weekenders (20 percent).<sup>2</sup> The men identified as not being able to handle their liquor included party drinkers (20 percent) and the alcoholics, labeled as "winos" (18 percent). Among settlement women, those who were judged to be able to handle alcohol included those who did not drink (36 percent), those who drank "once in a while" (39 percent), the weekenders (12 percent), and the party drinkers (6 percent). The only group of women identified as not being able to handle alcohol were those identified as "the winos" (7 percent).

Each of these styles was differentiated primarily by the frequency of drunkenness. Being able to handle alcohol was described as drinking in a manner that was not considered troublesome by community standards. Although the manner of handling alcohol had the same labels for both men

and women, the women's drinking styles were much less spectacular than the men's, and women's drinking was characterized by a preponderance of mild drinkers and abstainers. The study showed that 75 percent of the adult women (vs. 42 percent of men) seldom, if ever, drank or got drunk, and only 7 percent of the women (vs. 18 percent of men) fell into the "wino" category. Ninety-three percent of the women (vs. 62 percent of men) were classified as being able to handle their liquor. The female "party drinkers" practiced a sporadic pattern of drinking. Although perceived as somewhat pugnacious when drunk, their behavior was much less troublesome to the community than that of the male party drinkers. The women classified as winos ( $n = 9/134$ ) were considerably older on the average (54 vs. 40) than the male winos, and the drinking style of both genders was perceived as being very similar (e.g., they get drunk whenever they can). None of the female winos were in the labor force, and all had experienced trouble with the law for driving while intoxicated.

Because of the distinctly different drinking styles, Leland (1978) argued that applying the "drunken Indian" stereotype to this community was highly inappropriate. She also recommended that more research be focused on women's coping strategies related to alcohol in their families and communities rather than just developing classifications of drinking styles. To date, despite the contribution that such information would make, no followup research of this sort has been reported.

<sup>2</sup> The classification of "weekender" may have included "binge drinkers" who consumed large quantities of alcohol when drinking. These drinkers may have experienced adverse consequences from drinking that were not tapped by the community perception of "problem" at the time. This may have changed over time. Today, community observers might identify the "weekender" as a problem drinker and classify that individual as someone who could not handle his or her liquor.

## ALCOHOL USE IN URBAN SETTINGS

Using ethnographic methods, some of the earliest epidemiologic research among urban Indian populations was conducted by Burns, Daily, and Moskowitz in 1972-73 to determine what effects moving from the reservation to the city had on drinking practices and problems. They interviewed 552 Indians (302 female) living in Los Angeles (Burns et al. 1974). The respondents represented 80 tribes (17 percent Navajo, 12 percent Sioux), with ages ranging from 18 to 89 years (median age 32). Burns and colleagues (1979) characterized the female respondents as among the poorest of the poor, with severe economic and social deprivation, and suffering from feelings of isolation and alienation. Of women under age 50 who were interviewed, more than 40 percent were classified as heavy drinkers, and most began heavy drinking in their youth. A generational pattern emerged, with 41 percent of women under age 50 reporting heavy drinking as compared with 26 percent of women over age 50. Although the women reported that 67 percent of their mothers were abstainers, only 36 percent of the respondents reported themselves abstaining (Burns et al. 1974).

Many of the women in the Burns et al. study reported that their drinking increased when they moved to the city. Although less than 25 percent reported binge drinking, the bingers noted that this was not deliberate behavior but something that just happened in the course of socializing. As

responsibility for marriage and family increased, drinking was curtailed. However, 5 percent of the women reported that their drinking had severely harmed their marriage and/or their children (Burns et al. 1979). Only 10 women reported seeking help for their drinking, but 50 claimed to have successfully stopped drinking with the help of religion, moral conviction, or concerns about their health. The overall impression was that functional reservation behaviors were transferred to the city, where alcohol use styles became dysfunctional (e.g., drinking to socialize, which increased in the city with increased availability of alcohol; sharing alcohol; drinking in groups; drinking outdoors; and drinking in public places) for these women (Burns et al. 1979).

Beginning in 1978, Weibel-Orlando also used ethnographic observation to study Los Angeles urban Indian alcohol use. Weibel-Orlando worked in-depth and over time with individuals representing four of the major tribal groups living in Los Angeles. Her study sample was very small and could be subject to sample selection bias, so the conclusions might be overstated. Nevertheless, her findings are strongly suggestive of the kinds of differences that might result from careful research with individuals from different tribes and locations. The women in her sample included Navajo ( $n = 21$ ), Sioux ( $n = 9$ ), women from eastern Oklahoma ( $n = 11$ ), and California Indian women ( $n = 17$ ).

While Indian men in Weibel-Orlando's samples drank significantly more frequently than did the women, there were important within- and

across-tribe differences. Across all tribes, the women drank less frequently than the men did. However, the male/female difference among the Navajo and Indians from eastern Oklahoma was large; the difference was smaller between California men and women, and minimal among the Sioux. Also, the Sioux women drank much more frequently than did all the other women. The urban Sioux women reported drinking as frequently as the urban California and eastern Oklahoma men did (Weibel-Orlando 1986). This anomalous drinking pattern was also observed in a sample of rural Sioux. Here, the women ( $n = 15$ ) drank more frequently and consumed more alcoholic drinks per drinking episode than did the men ( $n = 16$ ).

This style of drinking is in contrast to the more usual reservation pattern in which Indian men drink more than Indian women do, and it represents a change in behavior from that reported by Whittaker in 1962. Weibel-Orlando observed that this reconfirmed her conviction that extensive direct observation is required to develop a true understanding of alcohol use behavior among Indian people. To develop a clearer picture of the interaction of culture and environmental influence, as well as gender and generation, a larger study of the drinking differences by tribal affiliation is needed; such a study might increase our understanding of alcohol use both on reservations and in cities.

Direct observation was also conducted in Anchorage, Alaska, by Patrick Dubbs when he explored pat-

terns of adaptation to urban living by Eskimo migrants to the city (Dubbs 1975). Using an instrument called the Health Opinion Survey, Dubbs tested 188 Eskimo (63 male, 125 female) to determine the amount of stress they perceived. He found no significant differences in the degree of stress based on sex, age, or marital status. The pre-eminent management response to stress was drinking alcoholic beverages. However, of 137 Eskimo for whom Dubbs had complete drinking data, 25.5 percent were total abstainers. Among the drinkers, the male Eskimo, ages 20-29, had significantly more severe drinking problems than the female Eskimo, and unmarried Eskimo had more problems than married Eskimo. Men were more often arrested for being drunk in public than were women. Four times as many men as women (33.3 percent vs. 7.9 percent) were classified as severe drinkers. However, women ages 30-39 reported more severity of drinking problems than did women ages 20-29 (15.0 percent compared with 2.0 percent). Among the women, 33.7 percent reported no use of alcohol, 55.1 percent reported minimal use, and 3.4 percent reported moderate alcohol use. The least visible of all Eskimo drinkers were the occasional and social drinkers. Although they sometimes frequented public drinking places, they also drank in private situations. The occasional drinker was most likely to be a married female, who had the lowest probability of becoming intoxicated. Dubbs (1975) suggested that this

showed the stabilizing effect of marriage upon the individual Eskimo.

The differential patterns of drinking reflected ways that Eskimo attempted to reduce the stress of urban experience; there was a significant association between levels of stress and severity of the drinking problem. However, Dubbs (1975) found that drinking was only a temporarily effective response and did not remove the intraindividual or external sources of stress. Because drinking usually resulted in other, more adverse consequences for the individual Eskimo (i.e., arrest, incarceration, disruption of essential relationships, reduction of life expectancy, and erosion of self-esteem or positive identity), Dubbs concluded that drinking was an ineffective response to managing stress. He did note that, while overall adaptive responses were not encouraging, Eskimo females made better adjustments to life in Anchorage and their lives were physically easier than they would have been in a village.

Additional information on differences in drinking styles and patterns was reported in a National Institute on Alcohol Abuse and Alcoholism (NIAAA)-funded project in which 20 Indian communities were surveyed between 1974 and 1978 (Moss 1979; Moss and Janzen 1980). The survey sought to identify attitudes and opinions about alcohol use and information on drinking patterns at a time when there was very little information available about Indian drinking practices. The survey interviewed 2,852 randomly selected heads of households on reservations and in urban settings. Of

the 2,852, gender was not recorded for 13 individuals, so the sample of identified respondents by gender for purposes of analysis was 2,839. Of this group, 648 (196 men; 452 women) reported themselves to be nondrinkers, while 2,191 reported currently using ( $n = 1,800$ ) or having used ( $n = 391$ ) alcohol in the past. Of the nondrinkers, 70 percent were female; 61 percent of the males reported being former drinkers (Moss 1979).

Of the 2,191 respondents reporting alcohol use, 86.5 percent of men and 67.3 percent of women used alcohol to some extent. As observed in other studies, a greater proportion of women (61.2 percent) reported never getting drunk when drinking compared with men (38.7 percent). Significantly more males (61.2 percent) reported always getting drunk when drinking than did females (38.8 percent,  $p < 0.001$ ) (Moss and Janzen 1980). The fact that almost 39 percent of women reported always getting drunk when drinking is nevertheless a worrisome figure.

When asked about the drinking practices of their parents, 1,646 (out of 1,811) participants provided data on parental drinking behaviors. Slightly more than one-third (38 percent) of the female respondents said their mothers never drank, compared with only 10 percent of the fathers of male drinkers. Among drinkers who reported infrequently or seldom getting drunk, both the men and women reported that they had parents who drank only occasionally ( $p < 0.001$ ) (Moss and Janzen 1980). Their responses suggest that parental role

modeling may be an important feature in shaping Indian children's alcohol-related behaviors.

## CIRRHOSIS

Despite the observations that many more Indian women than men abstain from alcohol use, there is strong evidence that some Indian women drink to excess, with deleterious consequences. A death certificate survey conducted by Johnson (1980) suggested that Indian women were drinking more than was commonly believed. Because of the association between liver cirrhosis and excessive alcohol consumption, reported cirrhosis mortality was used as an indication of the prevalence of alcoholism in a population. Johnson noted that although "the occurrence of cirrhosis is not 'invariably linked to alcohol consumption, the majority of cirrhotic deaths are usually considered to be alcohol-related.'" (Johnson 1980, p. 456, citing Day 1976). Johnson found that one in four deaths among Indian women ages 35-44 was attributed to cirrhosis.

At the time, the high rates of cirrhosis were viewed as an anomaly, given the knowledge of high abstinence rates among women and the lack of prevalence data on heavy drinking by Indian women. More recent research shows that many Indian communities also have a high prevalence of hepatitis, and this is also a source of cirrhosis if left untreated (Welty et al. 1991; Cullen 1999). Johnson (1980) recommended that additional research be conducted to determine if the observed differences in alcohol-related cirrhosis by race and sex were a result of reporting biases

between groups; and that more investigation into Indian women's use of alcohol be conducted. Johnson also suggested that tribal variations should be explored to ascertain if cirrhosis deaths at an early age might be due to diseases other than alcoholism.

The Indian Health Service (IHS) recently began to issue gender-specific vital data reports that provide information on Indian deaths from chronic liver disease and cirrhosis. The 1997 report (Trujillo et al. 1997a) noted that Indian males are more likely to die from cirrhosis than Indian females for all age groups over 34 years, but Indian females have a much higher death rate from cirrhosis than females in the U.S. All-Races and white populations. The peak Indian female death rate (79.1 deaths per 100,000 population for women ages 65-74 years) is more than three times the death rates for All-Races women (23.1 deaths per 100,000) and white women (23.4 deaths per 100,000). The death rates by age and sex for chronic liver disease and cirrhosis are summarized in table 3. Indian rates have been adjusted to compensate for miscoding of Indian race on death certificates.

IHS vital data also indicate that the alcoholism death rate for Indian women ages 35-74 continues to far exceed the non-Indian death rates for women due to alcoholism. Indian women's rates range from 49.3 to 87.6 deaths per 100,000 population. This is much higher than the rates for Euro-American women in the same age group (i.e., 3.9-9.4 deaths per 100,000 population) and the U.S. All-Races rate (4.9-9.9 deaths per

100,000 population) for the calendar year 1993 (Trujillo et al. 1997a). For Indian women in 1992-94, chronic liver disease and cirrhosis ranked as the sixth leading cause of death, while unintentional injury from crashes and falls (and other unintended fatal events) continued to rank as the third leading cause of death (with motor vehicle crashes contributing two-thirds of the fatalities) (Trujillo et al. 1997a). Although men continue to die from alcoholism and alcohol-related events at a greater rate than women do, gender-specific vital data help to track trends and changes in these patterns. Vital data also provide a baseline against which efforts to reduce death, injury, and illness can be tracked and monitored, as called for in the decennial national health

objectives (U.S. Department of Health and Human Services 1991).

## ALCOHOLISM TREATMENT

Although alcohol misuse has plagued generations of Indians (French 2000), planned community-based treatment programs were not initiated until the late 1960s. The majority of programs were established for or tended to attract men. Vanderwagen, Mason, and Owan (1988) suggested the following explanatory factors: (a) there was a perception that alcoholism was largely a male problem; (b) cultural expectations may have prevented equal access for women; (c) in Indian communities as in the society at large, there was a tendency to be more protective of women; and (d) the major-

**Table 3.** Chronic Liver Disease and Cirrhosis Death Rates by Age and Gender for Indians, 1992-94, and for Whites and U.S. All-Races, 1993 (Rate per 100,000 Population).

Age Group (Years)	American Indian and Alaska Native			U.S. White (European American)			U.S. All Races		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Under 1				0.5	0.6	0.3	0.5	0.7	0.2
1-4				0.1	0.1	0.0	0.1	0.1	0.1
5-14				0.0	0.0	0.0	0.0	0.0	0.0
15-24	0.6	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1
25-34	18.3	16.4	20.2	1.6	2.1	1.0	1.7	2.3	1.2
35-44	59.6	69.4	50.5	8.2	12.3	4.1	9.2	13.5	5.0
45-54	95.6	125.4	68.3	15.2	22.9	7.6	16.4	21.6	7.5
55-64	88.9	111.4	68.6	26.4	37.5	16.2	26.8	38.2	16.5
65-74	80.3	81.8	79.1	33.0	44.9	23.4	32.7	44.8	23.1
75-84	67.5	85.7	55.2	33.4	43.7	26.9	32.6	42.7	26.3
85 +	58.9	87.7	42.3	22.5	35.7	17.3	21.7	34.2	16.9

Note: The Indian Health Service Program Statistics Team combines data for chronic liver disease and cirrhosis when presenting death rates for Indian populations.

Source: Adapted from Trujillo et al. 1997a, p. 28.

ity of treatment counselors were male, and this may have discouraged women from seeking treatment.

When specific programs for women were developed, they tended to be small and have only a few beds. During the 1984 program review of IHS efforts to address Indian alcoholism, only four programs specifically designed for women were identified (Vanderwagen et al. 1988). With the research demonstrating the high prevalence of fetal alcohol syndrome (FAS) among southwestern tribes, more attention was directed toward early intervention for women drinkers and prevention of FAS (May and Hymbaugh 1982/83; Masis and May 1991). In the 1990s, there were sufficient efforts on behalf of women alcohol abusers to warrant evaluation of IHS efforts. In the 10 years between the IHS Alcoholism Program Review and the program evaluation, the number of treatment programs for Indian women had grown from four to nine (Brindis et al. 1995).

The IHS evaluation showed that women in treatment began using alcohol early; the average age of first use was around 14, with some participants reporting use as early as age 6. Introduction to AODs was often through peers, although some women reported beginning to drink with their parents. Often women indicated that they began using AODs with their boyfriends.

Women in treatment described long-standing, recurring cycles of unresolved emotional problems, low self-esteem, anger, and depression (Brindis et al. 1995). Grant (1995) reported anger, frustration, and anxiety in alcohol clients in his study of

Menominee alcoholics. O'Neil (1993) suggested unresolved grief as a possible comorbid condition associated with alcohol misuse, and Brave Heart and DeBruyn (1998) discussed the potential contributions of historical unresolved grief. Walker and colleagues (1993) noted that the prevalence of comorbidity between alcohol dependence, drug dependence, and psychiatric conditions appeared high in Indian patient populations, and that matching patients to appropriate treatment might improve treatment outcomes. From the little research available, it is clear that Indian women's treatment programs must be prepared to address grief, anger, and depression as a part of the course of AOD treatment.

In the IHS patient population, motivation to enter treatment was fairly evenly divided between parenting/children issues (28 percent), a desire to change one's lifestyle (25 percent), and a desire to stop using AODs (22 percent). Other motivations included court-ordered treatment (17 percent), wanting help (8 percent), and pressure from family or friends (4 percent) (Brindis et al. 1995). Important characteristics of treatment programs for women included a focus on Indian culture, a family atmosphere, and accommodation of children. Child care is a very important issue for women deciding to enter treatment. Barriers to treatment cited by women were transportation, lack of partner support, and concerns about confidentiality (Brindis et al. 1995).

Although the women's treatment evaluation study did not address phys-

**Table 4.** History of Physical and Sexual Abuse Reported by Indian Adolescents in Regional Treatment Centers, by Gender and Type of Abuse.

Abuse	Girls		Boys		Total	
	N	%	N	%	N	%
Physical	27	15.3	28	12.2	55	13.5
Sexual	32	18.1	25	10.9	57	14.0
Both	31	17.5	12	5.2	43	10.6
None	87	49.2	165	71.7	252	61.9
Total	177	100.0	230	100.0	407	100.0

Source: Reprinted from Trujillo, M.H.; Nolan, L.J.; and Smith, E.M. *Evaluation of the Indian Health Service Adolescent Regional Treatment Centers*. Rockville, MD: Indian Health Service, 1997. p. 23 (Table 10).

ical, emotional, or sexual abuse, an IHS report on evaluation of adolescent treatment centers highlighted the high proportion of adolescents in treatment who reported physical or sexual abuse prior to referral for alcoholism treatment. When 407 client charts were reviewed, including those of 230 boys (57 percent) and 177 girls (43 percent), it was found that almost one quarter (24 percent) of the adolescents admitted for treatment had experienced physical abuse, sexual abuse, or both (Trujillo et al. 1997b). Girls reported physical and sexual abuse three times more often than boys (17.5 percent vs. 5.2 percent), and, in all cases, girls reported higher rates of abuse than boys reported (see table 4). The adolescents also reported suicide attempts, as well as behaviors that caused problems for them at school.

Thus, in developing treatment programs for women, it seems especially important to include counseling and support for any abuse issues that influence the treatment and its outcomes.

One clinical director of a women's program in the Southwest noted that before a program can address issues of physical and sexual abuse in clients, it is important that staff deal with their own issues of abuse. If this does not happen, then the staff cannot be effective in counseling clients and may, because of their own unresolved issues, be detrimental to the client in their roles as therapists or counselors (C. Shelton, personal communication, April 1999).

Taking into consideration the complex life themes often present among Indian women who misuse alcohol, Lowery (1994) proposed an Indian Women's Recovery Model, which provides an example of an intervention that she believes can be tested. Using in-depth qualitative research with six Indian women participants as a basis for the model, Lowery identified key cultural constructs and suggested that healing the spirit is central to recovery. Her recovery model is developmental and emphasizes the relational nature of the lives of the



women from an intergenerational perspective and an ecological perspective.

To help explain the model in ways that clients can understand, Lowery used the model of the Medicine Wheel. She drew on elements of Eastern Cherokee Four Directions (Garrett 1990) and the Ottawa and Ojibway medicine wheels (Coggins 1990) and incorporated the elements to organize constructs defined in the recovery process of the women. The wheel for the Indian Women's Recovery Model is divided into four quadrants, reflecting the North (wisdom), East (spiritual awakening), South (revival), and West (introspection). Each quadrant is then further subdivided into Positive Discontinuity (Southwest), or the personal elements of breaking the cycle of addiction; Expanding the Circle (Southeast), denoting reconnecting relationships; Reclaiming the Mother (Northwest), a metaphor for acknowledging the realities of the past; and Developing a New Continuity (Northeast), representing both present and future orientations, and focusing on the contributions of Indian people.

Within the framework of this recovery model, Lowery (1994) considered *Reclaiming the Mother* as a key element. All six women in the study consistently reported physical, verbal, emotional, and sexual abuse, including rape. The research revealed six childhood and adolescent (ages 5-14) psychological injuries that needed healing in these women. Lowery identified these psychological injuries as *Betrayals of the Spirit*. From the young woman's perspective, these

betrayals included absence, abuse, failure to protect the child, rejection, shame, and abandonment. Lowery also postulated that an essential component to healing the spirit for women is the mother-daughter relationship. That relationship serves as a bridge to acknowledge one's own role as a mother and nurturer and permits the mothering of oneself and one's own children. Thus, acknowledgment is hypothesized to be a critical contribution to the process of intergenerational healing (Lowery 1994).

Reclaiming the Mother constitutes the core of the healing process. This process is facilitated through a series of questions for discussion that place the caretaker (e.g., mother, foster parent, grandparent, father, relative) in the context of her or his own sociohistorical time, within the context of one's own life development and life transitions, and within the context of the resources available. Finally, Reclaiming the Mother calls for a review of the gifts given in spite of an alcoholic family system and/or community.

Lowery's approach is consistent with Indian adaptations of the Alcoholics Anonymous (AA) treatment model. In *Sobriety Through the Sacred Pipe* (a Lakota adaptation of AA), the loss of the Native way of life is viewed as a root problem requiring spiritual reclamation (Womack 1996). A second adaptation of AA can be found in the White Bison model, in which a central goal is to restore to the individual or community the principles and values associated with pre-contact tribal cultures. (See discussions of Indian values in Trimble 1976;

Richardson 1981; and Herring 1999.) Restoration is aided in Step Four of the White Bison model by getting to know "ourselves and our place within the circle of life" (Simonelli 1993, p. 42). These and other treatment approaches are reviewed in chapter 7 of this monograph.

Although Lowery's model contains many elements identified as important in the IHS women's treatment evaluation study (e.g., use of the Medicine Wheel and the "Indian Belief System," emphasis on family, focus on Indian culture, a focus on women-centered treatment, and strengthening social networks) (Brindis et al. 1995), it has yet to be tested in actual treatment settings. Nevertheless, Lowery has proposed a framework that provides a culturally congenial approach as an alternative to the standard 12-step approach currently in use.

It stands to reason that treatment modalities that are rooted in culturally appropriate and culturally sensitive concepts may have a better chance of success than treatment approaches imposed from non-Native assumptions and research (Womack 1996; Sue and Sue 1999). However, there are not enough reports of treatment protocols or evaluations of specific approaches used within Indian communities to know what works. Considerably more research is required to identify appropriate assessment methods, therapeutic tools, and treatment regimens most appropriate to Indian people. Holistic or comprehensive treatment approaches that include a spiritual element seem to be considered essential, since most treatment programs incorporate some

form of Indian ceremonial or spiritual observance as a part of the program (Hall 1986; Grant 1995). But until rigorous evaluation of treatment outcomes is conducted, what "works" will continue to be the subject of anecdotal report and strongly held personal conviction.

## FAMILY AND COMMUNITY

For Indian people, reservation and urban alike, the family has always been regarded as the basic unit of social expression (Sue and Sue 1999). When families undergo destabilization, the entire community is aware of the problem. In most Indian communities, members of the family still have distinct and identified roles, many of which have been handed down over generations (Ryan 1981). The ideal family unit is the extended family, but Indian families have shown great resilience in adapting their family structures to evolving life demands. The cohesion of the Indian family is especially important in urban settings, and families and the community regularly plan and host events that reinforce the importance of the collective Indian heritage through ceremonies and activities with a major focus on children (Ryan 1981).

One commonly identified indicator of family distress is the female-headed household, with the concomitant assumptions that the inordinate strain of single parenthood contributes to social instability, high levels of stress, socioeconomic deprivation, and isolation (Red Horse 1981; Bachman 1992; Jumper-Thurman and Plested

1998). Where families are not intact, positive interventions include deliberate instruction in teaching family members effective ways to communicate, to build social networks, and to manage and reduce stress (Bachman 1992). Red Horse (1981) also encouraged the identification of families that are intact as well as their strengths and ability to serve as role models for others in the community.

In addition, families need help coping with the multicultural environment in which they find themselves. Support for traditional culture is important, but learning how to cope with modern society, especially urban existence, is equally important. Programs that incorporate traditional approaches while helping adolescents and adults adapt to urban existence are identified as training individuals in bicultural skills (LaFromboise and Rowe 1983; Schinke et al. 1989; Choney et al. 1995). Oetting and Beauvais (1990/91) noted that identification with either the minority or the majority culture is a source of personal and social strength, and increasing identification with one culture does not require decreasing identification with another. Indian families need to know that they have choices, and they need to be aided in making positive choices for themselves and their children. One way to provide support is for local schools to offer culture-specific or culture-general curricula or afterschool programs that address positive Indian role models and values and confront negative stereotypes. Building positive Indian identity in children is a crucial preven-

tion component (Bachman 1992). In the end, what strengthens the family also strengthens the community, and what strengthens the community provides support for the family.

## DIRECTIONS FOR RESEARCH

Indian women represent a significant segment of Indian society and are often acknowledged as the principal source of community strength and cohesion. Yet there is very little research specific to the role of alcohol in the lives of Indian women. If we were to suggest priority areas for investigation, these might include epidemiology, abuse and victimization, alcohol in the family, preventive actions, protective factors, treatment, the genetics of alcoholism, gender and comorbidity, and societal influences.

## EPIDEMIOLOGY

Although studies of Indian alcohol use more frequently report data on both men and women, there is still a need for a broad-based epidemiology that provides insight into alcohol use differences by gender, age, geography (e.g., urban vs. rural), and tribe. Just as alcohol use by men varies from reservation to reservation and from reservation to urban settings, so does the drinking behavior of women. Moreover, adolescents are presenting different drinking patterns than their parents, and the prevalence of drinking by adolescent Indian girls is catching up with that of adolescent Indian boys (Beauvais et al. 1989). To develop effective interventions, it

would be helpful to better understand the overall patterns of alcohol use in both genders, as well as the changes in use from generation to generation.

### ABUSE AND VICTIMIZATION

To develop appropriate preventive and treatment interventions and to better understand the intergenerational nature of abuse and victimization, considerably more research needs to be directed at examining the conditions under which these behaviors take place. This research should include descriptions of the applicable sanctions, or absence thereof, that prevent or support intergenerational victimization and violence.<sup>3</sup> Conditions that precipitate violence and victimization, such as economic deprivation, stress, intoxication, and inability to cope, need to be better understood in a cultural context. The prevalence of abuse and violence among Indian people may be seriously underestimated (Bachman 1992), but until there is adequate research in this area, it will be difficult to develop effective treatment and prevention programs for individuals and communities.

Because there are so few data in this area, we need to ask basic questions to help establish a baseline for future research. Such questions might include

- Is there a difference between urban and rural abuse and violence?
- Are there differences between tribes?
- What are the educational, socio-economic, and cultural predictors of victimization and perpetration?

- When members of a community become aware of violence, what are the interventions attempted?
- What can be done to prevent spousal and child abuse and violent victimization?

This last question is critically important because the solutions generally employed, such as referral to non-Indian authorities, are viewed as both inappropriate and unacceptable in many Indian communities. Yet internal cultural controls appear to have broken down, so the "non-intervention" approach of doing nothing is applied. For the victims of violence and abuse, this is not a workable solution. But until appropriate research is conducted exploring these issues, interventions will continue to be applied that may not be the best ones possible. Zahnd and colleagues discuss additional research issues in the area of alcohol and violence in chapter 16.

### ALCOHOL IN THE FAMILY

Another area in which there is very little information is the impact of alcohol use on Indian families. This is especially important when the mother drinks too much, because it places children at risk in utero and while growing up in an alcohol-abusing family context. Research foci should

<sup>3</sup> In a conversation one of the authors (PDM) had with an Indian Child Welfare caseworker, the caseworker described being overwhelmed and not knowing where to intervene in a family in which she had uncovered evidence of five generations of female sexual abuse and incest. The caseworker could not understand how this had been permitted to continue for so long.

include identification of family problems; appropriate, culturally sensitive, and effective preventive interventions; and treatment facilities that contribute to the development of family support systems. Results should be shared widely among tribal and urban mental health and community service workers.

Indian researchers recommend focusing on strengths rather than pathologies as a constructive approach (Atneave 1977; Red Horse 1981; Bachman 1992), and identifying the strengths in Indian families is crucial to development of prevention, treatment, and support mechanisms. Understanding the elements contributing to family strengths in contemporary environments may provide models on which successful prevention and treatment programs can be built. How does the composition of urban families differ from that of reservation families, and what are the positive aspects of each in terms of preventing and controlling alcohol misuse and problems? Who are the most appropriate persons to advise families, especially if the extended family is geographically separated? How have the traditional roles of husband and wife changed over time and by location, and what are the implications of such changes for alcohol use?

Perhaps one of the most important questions might be, What has been the long-term impact of the Indian Child Welfare Act on children and their families and communities?<sup>4</sup> Has the intervention of tribal courts and removal of children from the homes of alcohol abusers created change in how communities perceive alcohol

misuse in families and increased programs for intervention on behalf of the children and treatment for the drinking parents? How else have the effects of this and other self-determination legislation changed a community's perception of its ability to manage community problems?

### PREVENTIVE ACTIONS

Several authors (Whittaker 1963; Mail 1967; Burns et al. 1979; Edwards et al. 1995; Novins et al. 1996) have cited the need for recreational outlets or facilities, both on the reservation as well as in urban settings, as an alternative to drinking. This is a recurring theme in discussions with Indian youth as well as adults. But the availability of recreational programs as a specific intervention or therapy with Indian youth or adults has not been tested. There are a few examples of recreational activities having positive health impacts, including the Zuni Pueblo running and aerobics programs that were initiated to prevent non-insulin-dependent diabetes in this population (Leonard et al. 1986; Heath et al. 1991). Although designed to help diabetics lose weight, the restoration of a traditional activity (e.g.,

<sup>4</sup>The Indian Child Welfare Act of 1978 reversed the trend of removing Indian children from reservations and placing them in non-Indian foster care. The act required that foster care for Indian children be provided through tribal court procedures and that children be placed with Indian families whenever feasible (Taylor 1983). This gave rise to increased community involvement and the creation of tribal courts. One of the primary reasons for foster placement was alcoholism in the family of origin (Thompson 1991; Thurman et al. 1995).

running) was taken up by the community and had positive preventive outcomes for adolescents and therapeutic effects with recovering alcoholics.

### TREATMENT

There are few facilities and programs dedicated to treating chemically dependent Indian women. Women seeking treatment also want to be assured that their children are cared for and safe. There are a few facilities that accommodate women and children, but, generally, this is an area of great need. Research can contribute to an understanding of what mix of services and therapeutic approaches work best, and with which women. Are comprehensive treatment programs for women different than those for men? Should they be different? And if so, in what ways?

### GENETICS OF ALCOHOLISM

As genetic research increases its contributions to our understanding of the genetics of alcohol addiction, we will have a better understanding of whether there are increased risks by gender. Are the genetics of women alcoholics different from those of men? Are certain traits passed from generation to generation? And if so, what environmental conditions can trigger or exacerbate genetic traits? If risk factors are identified, how can these be addressed in prevention and treatment programs? Should Indian patients in general medical care be screened for risk factors? What are the ethical and legal implications of determining genetic susceptibility?

### GENDER AND COMORBIDITY

Recent research literature has begun to explore the co-occurrence of alcohol dependency and mental illness. We need to know a great deal more about the comorbidity of alcoholism. Do women express more or different comorbid conditions associated with their drinking than do men? Is comorbidity the same among urban and reservation women? How does chronological age factor in the development of comorbid conditions? Does psychological distress precede the alcohol abuse and dependency, or does alcoholism precede other conditions? What do we know about the relationship between posttraumatic stress disorder and alcohol use in women? Panic attacks? Depression? How should clinicians screen for these comorbid conditions? What are appropriate individual and community-based prevention and treatment interventions?

### SOCIETAL INFLUENCES

It is often assumed that the environment of poverty and what Duran and Duran (1995) identify as "postcolonial" psychology<sup>5</sup> contribute to the various levels of alcohol use and misuse in Indian communities.

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<sup>5</sup> Duran and Duran (1995) recognized that colonization has adverse effects on Native peoples and that European colonization of the Americas has influenced much of the current knowledge in psychology. Postcolonial psychology proposes a new prevention and treatment model to help Indian people deal with problems they encounter as part of living in a colonialistic setting.

Alcohol-related behaviors are partially derived from these omissions [of cultural interpretation] and representations that construct a monolithic native subject and inscribe this subjectivity/identity with powerlessness and deviance. For these reasons, sociocultural and behavioral theories of alcohol use are not sufficient to inform a strategy with the potential to overcome alcohol-specific and other damaging health behaviors. Most standard theories of alcohol problems assume an evolutionary anthropology, a sociology of underdevelopment, or a pathologized psychology and target lifeworlds (culture) for behavioral change toward "normal" (read: western European). Programmatic failures in either participation or behavioral change should include an interpretation of target population resistance to cultural and/or social manipulation. (Duran and Duran 1995, p. 111)

These authors directly challenge the usual and accustomed approach to therapy and intervention. They suggest different approaches to treatment based in historic Indian community perceptions and experience. It would be instructive to test theories proposed by Western-trained Native American professionals.

In addition to historical societal influences on community mental health, there are other societal influences that should be investigated. To

date, socioeconomic status has not been tested for its contribution to adverse alcohol-related behaviors or consequences. Since Indian women are often the poorest of the poor (Burns et al. 1974), interventions that prepare them to be more self-sufficient and able to support their families should be explored. Furthermore, there is virtually no research that explores how young Indian men and women develop their perceptions and attitudes about alcohol, its place in their lives, and ways that each gender deals with it. Understanding whom they perceive as role models and why, and what expectations they have regarding alcohol, may help in developing prevention programs for reservations and urban centers. The environment in which Indian youth seem to be at highest risk for alcohol and comorbid problems may be the contemporary boarding schools supported by the Bureau of Indian Affairs (May 1982; Dinges and Duong-Tran 1989; King et al. 1992; Dinges and Duong-Tran 1993; Manson 1996). To date, research has not focused on the selection bias inherent in boarding school student samples nor on strategies to provide effective treatment in institutions whose mission statements are focused on academic achievement.

For Indian women and their families and communities, questions are legion and answers scarce. The subject of Indian women and alcohol represents one of the most understudied areas in all of Indian alcohol research. It remains for multidisciplinary collaboration to begin to separate myths

from reality and to identify and build on the strengths of the women to restore the strengths of the community.

## ACKNOWLEDGMENTS

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## Chapter 11

# Urban Indians and Alcohol Problems: Research Findings on Alcohol Use, Treatment, Prevention, and Related Issues

James R. Moran, Ph.D.

*KEY WORDS: Native American; urban area; migration; sociocultural change; sociocultural AODC (alcohol or other drug [AOD] cause); cultural identity; cultural patterns of drinking; treatment research; culturally sensitive prevention approach; literature review*

During a recent visit to Seattle to attend a national meeting on American Indian health issues, I was enjoying an afternoon break at the Pike Place Market. This is a public farmers' market that acts as a magnet for many tourists and for many of Seattle's homeless people. I observed a small group of American Indian men sitting on the grass; their dress and lack of cleanliness suggested that they were homeless. The men were drinking from a brown paper bag that they were passing around. As the afternoon progressed, so did the men's state of intoxication. I observed several groups

of non-Indian tourists enter the park, notice the group of Indian drinkers, talk quietly among themselves, and then either leave the park or give the group a wide berth. Later as I related this experience to other Indian friends, we noted with sadness that this display of public drunkenness reinforces the "drunken Indian" stereotype held by many, non-Indian and Indian alike (Leland 1976; May and Moran 1995). Yet, as will be seen in this chapter, the behavior of these public drinkers represents only a small part of the alcohol-related behavior of urban Indians.

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In this chapter I first describe the urban Indian population and discuss a set of governmental policies that have driven the migration from reservations to urban areas. I then discuss what we know from the research literature regarding alcohol use, treatment, and prevention among urban Indian populations. I conclude with some ideas concerning where we go from here.

The American Indian population is extremely heterogeneous. In the continental United States there are more than 500 federally recognized Indian tribes, as well as many tribal groups seeking Federal recognition (Hirschfelder and Montano 1993; U.S. Bureau of Indian Affairs [BIA] 2000). While some similarities exist among these tribal groups, there is also a great deal of variation as seen by the presence of many distinct cultural areas (Manson et al. 1992) and more than 200 currently spoken Indian languages (Fleming 1992). In addition, American Indians often differ greatly by degree of Indian ancestry, and since 1930 the majority of Indian people have been of mixed racial heritage (Wilson 1992). Finally, and this is critical to the focus of this chapter, while Indian people are often thought of as being isolated on reservations, the majority live in urban environments (U.S. Bureau of Census 1992; Hirschfelder and Montano 1993; Snipp 1996). As seen in table 1, the percentage of the Indian population who are urban has been steadily increasing. In 1900 only 0.5 percent of all Indian people were urban, and the numbers remained fairly small through 1940, when approximately 7 percent were urban.

**Table 1.** Proportion of the Indian Population Living in Urban Areas, 1900-90.

Year	% Urban
1900	0.5
1940	7.0
1950	13.4
1960	27.9
1970	44.5
1980	49.0
1990	51.0

A dramatic shift was seen after World War II, and by 1990, 51 percent of the Indian population were living in urban communities (Hirschfelder and Montano 1993; Davis 1994; Snipp 1996).

## THE EFFECTS OF GOVERNMENTAL POLICIES

The growth of urban populations, especially over the last four decades, did not occur by happenstance; rather, it can be seen as a direct result of governmental policy aimed at the assimilation of Indian people. Indeed, for well over 100 years there has been a consistent effort on the part of the U.S. Government to encourage Indians to leave behind their tribal identities and become part of the mainstream (Officer 1971). The dramatic increase in the urban Indian population is in large part a result of three policy efforts: the General Allotment Act, boarding schools and adoption, and relocation.

### ALLOTMENT POLICIES

In the latter part of the 19th century, after most Indian people were forcibly

removed from their traditional lands and placed on reservations, there were concentrated attempts to shift reservation land from communal or tribal ownership to individual ownership. These efforts culminated in the General Allotment Act of 1887 (Dawes Act). The basic provisions of this Federal law were to divide up or *allot* reservation land to individual Indian people. Each head of household was allotted 160 acres, although the amount of the allotment was amended to 80 acres after 1891. For each reservation, after all of the persons who were tribal members at that time had been assigned parcels of land, remaining reservation land was opened to homesteading by non-Indians.

There are many accounts of the devastation caused by this law (Waddell and Watson 1971; Hirschfelder and Montano 1993); one of the most serious results was the loss of individually owned Indian land. In part this occurred because the concept of private ownership and exclusive use of land was foreign to most tribal cultures. Under the duress of extreme poverty, individuals often sold their allotments to non-Indians without the full realization of the implications of this loss of individual property rights. By 1933 more than two-thirds of the Indian land base had passed into non-Indian hands (Sorkin 1978). This loss of land critically weakened the economic base of most reservations, resulting in high rates of reservation unemployment that subsequently forced many Indians into urban areas in search of job opportunities.

### SEPARATING INDIAN CHILDREN FROM THEIR CULTURE

During the same time period as the enactment of the General Allotment Act, another initiative established off-reservation boarding schools. These schools operated from the late 1800s until the middle of the 20th century, with the explicit purpose of removing Indians from reservations and teaching them the skills needed to live among whites (Meriam 1977; Adams 1995). Indian children were often forcibly removed from their families and placed in BIA boarding schools hundreds of miles from their home reservations (Guerrero 1979; McBeth 1983; Child 1998). These children were forced to learn white ways through such means as having their hair cut short, wearing European-style clothing, and being punished for speaking their tribal language. One result of this destruction of Indian cultural traditions was that many of these children ended up in urban areas rather than returning to their reservations.

As the use of boarding schools dropped off in the middle of the 20th century, the increased placement of Indian children in non-Indian foster and adoptive homes represented a less institutionalized version of accomplishing assimilation. A 1969 survey conducted by the Association on American Indian Affairs found that approximately 25–35 percent of all Indian children were separated from their families (Guerrero 1979). During the 1960s and 1970s Minnesota Indian children were placed out of home at a per capita rate 5 times

greater than non-Indian children; in Montana the ratio of Indian foster care placement was 13 times greater; in South Dakota 40 percent of all adoptions were of Indian children and the rate of foster care placement was 16 times greater than for non-Indian children (Byler 1977).

Reaction to the placement of Indian children in non-Indian homes culminated in the Indian Child Welfare Act of 1978 (Wares et al. 1994). This congressional act mandated that the priority order for placement of Indian children be members of the child's biological family, other members of the child's tribe, members of other American Indian tribes, and finally non-Indians. Despite this policy, rates of placement of Indian children with non-Indian families remain high, and many Indians currently living in urban areas were separated from their tribes and families through adoption by non-Indian families (Spicer 1995).

### RELOCATION POLICIES

The third governmental policy that had a direct impact on the urbanization of Indian people was the BIA Relocation Program. This program operated from 1952 to 1980 and was decreed to assist reservation Indians to relocate to select urban areas. The purpose of the program was to remove surplus labor from the reservations and thus expand economic opportunity for those remaining on reservations. This BIA program typically offered employment assistance in the form of a one-way bus ticket, new clothing, and temporary low-cost housing. The term "relocation" carried

a negative connotation, and in 1954 the program was renamed the Employee Assistance Program.

Over the life of the program thousands of Indians were relocated from reservations to cities, including Chicago, Los Angeles, Denver, San Francisco, Cleveland, and Dallas (Waddell and Watson 1971; Sorkin 1978; Davis 1994). Almost 30,000 Indian people were assisted in moving from reservations to Los Angeles County alone during the life of the Relocation Program (Weibel-Orlando 1991).

### URBAN INDIAN COMMUNITIES TODAY

The urban locations with the largest populations of American Indians are presented in table 2 (Frazier 1993). In exploring the context of alcohol use, treatment, and prevention, the third column in table 2 is particularly important. Despite substantial numbers of Indians in these cities, they make up only a small part of the total metropolitan populations. Only in Tulsa, Oklahoma, does the Indian population exceed 5 percent of the population, and in most urban areas the total number of Indians represents less than 1 percent of the population. It should also be noted that the Indian population in most urban areas is composed of people from many different tribes. For example, in his sample of Seattle urban Indians, Walker (1981) found members from 36 different tribes. In addition, in many urban areas, the Indian population is widely dispersed across residential areas rather than being highly concentrated in particular sections of the cities.



The combination of these factors (small numbers relative to the total population, multiple tribal groups, and dispersed residential patterns) presents barriers to researchers who wish to conduct intervention studies or demonstration projects among urban Indians. Obtaining resources to study small numbers, designing approaches that are culturally appropriate for multiple tribes, and delivering alcohol prevention programs or carrying out a research project across multiple communities or neighborhoods can be problematic and costly. For example, in my alcohol prevention work with urban Indian children in fourth through seventh grades in Denver, I found that typically each separate elementary school had one or two Indian students (Moran 1998). To deliver the prevention program without disrupting the schoolday for

the children required providing transportation to afterschool program sites and then providing transportation to the children's homes. This increased the complexity of implementing the project as well as the cost of the program.

Taking these factors into consideration, it is not surprising that we do not have a complete picture of alcohol use, prevention, or treatment in urban Indian communities. To examine these issues for this chapter, I conducted a comprehensive search of the literature. In this search of several databases, I used different combinations of the key words *urban*, *American Indian*, *Native American*, *alcohol*, and *substance use*. The search results were as follows: Psychinfo and Social Work abstracts, 14 sources; Academic Index and the Health Reference Center Academic Index, 5 sources; and National Library of Medicine Med-

Table 2. Major American Indian Urban Settings, 1990.

Metropolitan Area	Indian Population	% of Area Population
Los Angeles, CA	87,487	0.6
Tulsa, OK	48,196	6.8
New York, NY	46,191	0.3
Oklahoma City, OK	45,720	4.8
San Francisco, CA	40,847	0.7
Phoenix, AZ	38,017	1.8
Seattle, WA	32,071	1.3
Minneapolis, MN	23,956	1.0
Tucson, AZ	20,330	3.0
San Diego, CA	20,066	0.8
Dallas, TX	18,972	0.5
Detroit, MI	17,961	0.4
Sacramento, CA	17,021	1.1
Chicago, IL	15,758	0.2
Denver, CO	13,884	0.8
Portland, OR	13,603	0.9

line, 26 sources. The WorldCat Libraries database was also searched, but no further sources were identified. In addition to the computerized search, I also examined the literature cited by the sources located through the formal search process (Cooper 1989).

Based on the literature identified by this combined process, what we do know is that research has focused on specific parts of the urban picture. We have studies of specific populations within specific urban areas, and, therefore, the question of external validity is always present when we attempt to apply the alcohol-relevant findings to the general urban Indian population.

### ALCOHOL USE

A comprehensive epidemiologic study of Indian drinking in the United States has yet to be conducted; therefore, we do not have an overall picture of alcohol use. However, several studies of Indian alcohol use have been carried out in various urban locations with specific segments of the Indian population. (See table 3 for a summary of the studies described in this section.) Two field studies—by Graves (1971) and Spicer (1995)—provide rich descriptions of the lives of the most visible subset of Indian drinkers, and, although separated by a quarter of a century, the authors arrive at surprisingly similar conclusions.

Graves (1971) examined alcohol use among American Indians in Denver, Colorado. As in most relocation cities in the early 1970s, the migrants were predominantly young, single males, and in Denver a large percentage were Navajo. An examination of

Denver police records over a 10-year period (1953–63) revealed that high proportions of all arrests of Indians were alcohol related and that most arrests involved public drunkenness. In an attempt to understand these high proportions of alcohol-related arrests, Graves conducted an intensive interview and public record study. Data were collected on 259 Navajo males who lived or had lived in Denver during 1963–66.

Findings from this work indicate that alcohol use typically involved drinking with friends at Indian bars or in public areas such as on the street or in city parks. Pressure from friends to join them was the most common explanation given by study participants for their drinking behavior. For these young, single males, away from their home reservation and families, drinking with friends provided a sense of belonging that was otherwise missing in their attempt to adapt to living in the urban environment. Resources (money and alcohol) were shared, and drinking generally continued until there was nothing left with which to purchase alcohol. Because most searches for employment were unsuccessful, migrants often remained in Denver for only a short period of time. During their stay in the city, many would be arrested several times for public drunkenness.

A major conclusion from this study was that migrants who were least successful in obtaining well-paying jobs and who experienced the greatest value conflict between reservation and urban life experienced the highest rates of problem drinking. Further, drinking to

the point of drunkenness was a learned behavior rather than a form of psychopathology. Graves saw the Navajo social drinking group as an adaptive response to structural conditions such as economic deprivation and lack of community support. He concluded that "the vast majority of Navajo drunkenness . . . can be accounted for *without recourse to the fact that the subjects are Indian*" (p. 307).

Spicer (1995) carried out a similar anthropological field study of Indian drinking in Minneapolis. Over the course of 2 1/2 years he conducted 50 life history interviews with current and former Indian drinkers who received services from a community drop-in center. The nonrandom sample was evenly split by gender and consisted of nearly two-thirds Ojibwe and one-third Lakota. Although they lived in the urban environment at the time of the study, most of his informants had been born on reservations. Many arrived in the city by virtue of off-reservation foster care or adoption by non-Indian families. Because of Spicer's focus on drop-in center clients, the informants were American Indians who were in extreme poverty, many of whom were homeless.

All 50 informants had vivid memories of witnessing drunken behavior as they were growing up. While this was a common childhood experience and was the reason for many of the out-of-home placements into foster care, the informants did not necessarily view the drunken behavior of parents as negative, but rather as something commonplace and normal. Many of the informants reported the experi-

ence of taking their first drinks and experiencing drunkenness for the first time in the presence of their parents. They also talked of drinking with peers and said that the primary reason for drinking was boredom.

As adults, most of the informants either were or had been heavy drinkers. Alcohol was the central fact in their lives, and one of their primary life tasks was acquiring alcohol. Because of their poverty, they were often looking for someone with access to alcohol that could be shared with them. Most drinking took place in mixed-gender groups and normally involved passing a bottle of wine or hard liquor from person to person until it was gone. These *drinking groups* were easily established and were often maintained by pooling resources to keep the party going. Guiding principles for these groups thus were generosity and reciprocity.

The importance of Spicer's work is that it provides rich detail about the history and lives of a group that represents a visible minority of the urban Indian population. He reviews their daily struggles for survival, and he presents much detail regarding their thoughts about their drinking. In a sense he puts a human face to these individuals. One of Spicer's central findings is that drinking and drunkenness appear to be tied to these individuals' struggle with the issue of "what does it mean to be an Indian" (p. 170). All of the informants talked about their efforts to identify with being Indian, and most saw drinking as a way to connect with other Indian people. Many began drinking in order

Table 3. Studies of Urban Indian Drinking Patterns.

City	Tribe	Sample
Denver	Navajo	Nonrandom sample of Navajo migrants living in city between 1963 and 1966; 259 men
Denver	Sioux (54.3%), Navajo (19.0%), Cheyenne (5.7%), other tribes (20.9%)	Nonrandom recruitment through newspapers and community flyers; 105 adults—54.3% male, 45.7% female
Los Angeles	Navajo (17%), Sioux (12%), Choctaw (6%), Creek (6%), Chippewa (4%), Cherokee (3%), Pima (3%), O'odham (3%), Apache (3%), Pueblo (3%); the remaining 40% were from 78 other tribes	Random sample; 518 adults—41.7% males, 58.3% female; 69% fullblood, 13% 3/4 blood, 10% 1/2 blood, 8% less than 1/2 blood
Los Angeles	24% Navajo, 28% Sioux, 25% Eastern Oklahoman, 23% California Indians	Nonrandom snowball sample to obtain different types of adult drinkers; 155 subjects—58 heavy drinkers, 47 moderate drinkers, and 50 abstainers; 78 men, 77 women
Los Angeles	33% Navajo, Sioux, or Eastern Oklahoman; the rest were from approximately 85 different tribes	Nonrandom recruitment through interviewers' personal contacts; 282 elders—38% male, 62% female

Key Findings	Source
Indians who are better prepared to live in the city (i.e., more education, training in skilled labor, etc) exhibit fewer problems with alcohol. Social drinking groups represent an adaptive response to marginalization. Navajo drunkenness is a result of social conditions and not the fact that the drinkers are Indian.	Graves 1971
Approximately 50.5% of sample were abstinent or irregular drinkers, while 45.5% were regular drinkers. Of these, 3.8% were binge drinkers. A high family history of alcoholism was reported, with 60.6% having at least one alcoholic parent.	Gill et al. 1997
One-third of urban Indians were heavy drinkers, and another 18% were moderate drinkers. Changes in drinking behavior after coming to the city were documented, with 20% of respondents reporting reduced drinking. Men were most apt to become abstainers; heavy-drinking women were likely to reduce to moderate levels of drinking. Current heavy drinkers were apt to be younger (50% of former heavy drinkers were over age 40, and 1/2 of abstainers were over age 60). Former drinkers were more likely to be married, visit back home, and have strong Indian identity.	Burns et al. 1974
Heavy drinkers were likely to have had heavy drinking models in the family of origin, to be men, and to score high on psychological stress indices. Socioeconomic status (SES) and traditionalism were weaker predictors of drinking level. One's tribe, age, and SES influenced drinking styles and attitudes toward alcohol. The "teetotaler" was either a lifetime abstainer (usually older women) or a former drinker, now on the wagon (likely to be older men). "Whiteman's drinking" tended to characterize older Indians with higher SES, more education, and stable incomes (slightly more women than men).	Weisner et al. 1984; Weibel-Orlando 1986/87
A majority of domiciled elderly Indians (73%) did not use alcohol, with only 8% reporting drinking more than once a week. Drinking patterns of older Indians do not differ significantly from those of non-Indians.	Barker and Kramer 1996

*Continued*

Table 3. *Continued.*

City	Tribe	Sample
Minneapolis	Ojibwe (59%), Lakota (33%), Winnebago (6%), Cree (2%)	Nonrandom recruitment through urban drop-in centers; 50 self-defined problem drinkers—14 abstinent, 36 currently drinking; 25 men, 25 women
Seattle	Not indicated	Self-selected sample; 290 fifth and sixth grade youth followed for 5 years—49.6% male, 51.4% female
National	Not indicated	Representative sample, underreporting by some large urban school districts; nonreservation American Indian and Anglo 8th and 12th graders

to feel part of the larger community of Indian drinkers.

Two groups of researchers, Weibel-Orlando and colleagues (Weibel-Orlando 1984) and Gill and colleagues (1997) have focused on understanding urban Indian drinking by moving beyond the alcohol-related problem behavior focus of Graves' and Spicer's work. Weibel-Orlando and her associates at the University of Southern California (Weisner et al. 1984; Weibel-Orlando 1989) concentrated on understanding the Indian community in Los Angeles. The urban sample that they used was based

on the typology of three approximately equal-sized categories of Indian drinkers—one-third abstainers, one-third light to moderate drinkers, and one-third heavy drinkers—that was developed by Burns, Daily, and Moskowitz (1974). A snowball sampling approach was used to select 155 American Indian adults consisting of roughly equal numbers of non-drinkers, moderate drinkers, and heavy drinkers (see table 3).

The tectotalers consisted of two groups: lifelong abstainers and former drinkers. The lifelong abstainers were primarily women of middle-level

Key Findings	Source
Functional and dysfunctional aspects of drinking work together to engender ambivalence on the part of the drinker. Drinking provides a means of social connectedness, but it also may cause destruction of family relationships. The desire to quit is balanced by the desire to stay within the drinking support group. To understand Indian drinking, the social contexts of drinking must be understood.	Spicer 1995
The lifetime prevalence of having used alcohol to the point of intoxication was 4% at year 1 (mean age = 11.7 years), increasing to 41.5% at year 5 (mean age = 15.8 years). Higher risk of having been drunk was associated with being male, having familial alcoholism, and performing poorly in school.	Walker et al. 1996
For <i>ever used alcohol</i> , Indian 8th graders had a somewhat higher rate (80% Indian, 73% Anglo), but 12th grade rates were almost identical (94% Indian, 93% Anglo). For <i>ever gotten drunk</i> , the Indian 8th grade rate was substantially higher (42% Indian, 27% Anglo), but 12th grade rates for the two groups were almost even (76% Indian, 73% Anglo). A similar pattern was found for the 30-day prevalence. The results indicate that in the younger age group, Indian youth were at greater risk than the Anglo youth. For the older youth the risk appeared similar for Indian and Anglo youth, since the rates of use were almost identical on all of the measures.	Beauvais 1992

socioeconomic status. The former drinkers were primarily older men from lower and lower-middle socioeconomic status backgrounds. Many men and women in this category had quit drinking through the help of Alcoholics Anonymous and involvement in alcohol treatment programs. They also mentioned reconnecting with traditional Indian belief systems as important supports.

The moderate drinkers—or, in the language of the participants, those who “drank like Whitemen”—tended to be middle-aged or older and of higher socioeconomic status with

more formal education and more stable jobs. The heavy drinkers were primarily younger, unmarried, from lower socioeconomic levels, and not likely to be active participants in Indian cultural events such as powwows or traditional ceremonies. Although the authors did not provide an explanation, they observed that the moderate drinkers tended to be either full-blood or one-quarter-blood Indians, whereas the heavy drinkers were mainly half-blood Indians.

One of the primary conclusions of this study was that the often cited statistics regarding high arrest rates for

public drunkenness among urban Indians are not reflective of the general experience of these people. The view that all urban Indians are heavy drinkers who encounter serious alcohol problems is skewed by the extreme behavior of the relatively small group of chronic and habituated drinkers.

Using a nonrandom sample of 105 American Indians living in Denver, Gill and colleagues (1997) examined patterns of alcohol use and family history of alcoholism. The study participants were interviewed about their education, employment, past and present substance use, and family history of alcoholism. Recruitment took place through newspaper ads and through flyers posted at local Indian health and social service agencies. The sample contained approximately equal numbers of males and females and was predominantly composed of Sioux and Navajo (see table 3). Most of the respondents were living in private residences (58.1 percent), although some were living in shelters (17.1 percent); most were high school graduates (70.4 percent) and some were college graduates (11.4 percent). Although the majority of the participants were unemployed, approximately a third were employed or students (25.7 percent and 9.5 percent, respectively). Thus, the study participants, like those of the Weibel-Orlando study, were more varied in terms of their demographics compared with the chronic and habituated drinkers of Graves' and Spicer's research.

All of the respondents had a very high rate of family alcoholism (60.6 percent) as defined by having at least

one alcoholic parent. Further, when parents, grandparents, or siblings were included, almost all (88.9 percent) of the respondents reported a family history of alcoholism. In terms of current drinking, about one-half of the sample were either abstinent (14.3 percent) or irregular moderate drinkers (36.2 percent). Daily drinkers and binge drinkers were a small part of the sample (3.8 percent each); however, a substantial proportion of the sample (41.9 percent) drank 2-6 days per week. Indeed, using the Diagnostic Interview Schedule, 33.3 percent of the respondents were categorized as currently alcohol dependent. Compared with the non-alcohol-dependent group, this subset of the sample was predominantly single (74.3 percent vs. 47 percent were never married), had relatively low educational achievement (31.4 percent vs. 9.5 percent had elementary school only), had less full-time employment (4.4 months vs. 7.1 months of full-time employment in past year), and had more encounters with the criminal justice system (76.5 percent vs. 17.9 percent had at least one drunk driving conviction). Blackouts, binges, and physical fights were common among the alcohol-dependent group.

While alcohol played a significant role in the lives of many of the respondents, almost half were either abstinent or non-problem drinkers. Due to the nonrandom nature of the Gill et al. sample, it is difficult to know what to make of these findings. It seems likely that the recruitment procedures, especially the flyers posted at the health agencies, could have



biased the sample in favor of those with alcohol problems. However, even with the likely presence of this bias, problematic use of alcohol did not characterize the majority of the sample.

Three studies focused attention on alcohol use by specific age groups: one study of the elderly and two studies of urban Indian youth. Barker and Kramer (1996) surveyed American Indian elders in Los Angeles regarding their needs for health and human services during the period 1987-89. A convenience sample of 282 domiciled elders was recruited through the personal contacts of the American Indian interviewers and through referrals from the staff of Indian agencies. Respondents were asked to self-report their usual pattern of alcohol consumption and to provide information on the frequency and amount of alcohol used at one sitting. Seventy-three percent of the sample reported that they did not use alcohol, and 10 percent reported drinking less than once per month. Of the 17 percent of the sample who reported drinking more than once per month, about one-half (8 percent) of the total sample reported drinking more than once per week. The typical amount consumed during each drinking episode was one or two drinks. Women were less likely to report drinking more than once per month, and they also consumed fewer drinks. Age was related to the amount consumed by the respondents, with those elders age 60 or younger more likely to consume four or more drinks per sitting than elders 61 and older.

Overall the findings indicate that alcohol consumption among older

urban American Indians is minimal; however, we are again presented with a study that used a nonrandom sample. In addition, the use of personal contacts of the interviewers as a means of recruiting the respondents may have set the stage for underreporting of alcohol use and casts doubt on the external validity of the findings.

Walker and colleagues (1996) reported on alcohol use among American Indian youth in Seattle. This research involved a sample of 290 Indian fifth and sixth graders who were recruited from Seattle area school districts in 1988 and interviewed on a yearly basis. Data for the first 5 years of the planned 10-year study showed a lifetime prevalence of having drunk alcohol to the point of intoxication of 4 percent at year 1 (mean age = 11.7 years) increasing to 41.5 percent at year 5 (mean age = 15.8 years). The latter rate of 41.5 percent can be compared with a 25.8 percent rate for white and a 9.9 percent rate for African American 10th graders in the 1997 Monitoring the Future sample (O'Malley et al. 1998). For the American Indian sample, a higher risk of having been drunk was associated with being male, having familial alcoholism, and performing poorly in school.

A study by Beauvais (1992) provides a comparison of alcohol use for nonreservation Indian youth and Anglo youth. The study was carried out between 1988 and 1990 and involved 8th and 12th graders completing the American Drug and Alcohol Survey, an instrument developed by Oetting and Beauvais (1990) to

assess alcohol and other drug (AOD) use among adolescents. Lifetime and 30-day prevalence rates for alcohol use and having gotten drunk were reported. The sample was drawn from senior and junior high schools across the United States. Although the participating schools were self-selected, Beauvais states that the sample is representative of youth across the United States, with the exception that large metropolitan areas are underrepresented due to lack of participation by some school districts in those areas.

As shown in table 3, for 8th graders the Indian youth had a somewhat higher rate for "ever used alcohol," but for 12th graders the rates were almost identical. For "ever gotten drunk," the 8th grade Indian rate was substantially higher, but for 12th graders the rates for the two groups were almost even. A similar pattern was found for the 30-day prevalence. For 8th graders the Indian youth had a higher rate for "used alcohol in the past 30 days" (35 percent Indian, 28 percent Anglo), but for 12th graders the rates were almost identical (61 percent Indian, 60 percent Anglo). For "gotten drunk in the past 30 days," the 8th grade Indian rate was substantially higher (16 percent Indian, 10 percent Anglo), but again for 12th graders the rates for the two groups were almost even (40 percent Indian, 38 percent Anglo).

These results indicate that in the younger age group the American Indian youth were at greater risk, since they had higher rates on all of the measures of use than did the Anglo youth. For the older youth the

risk appeared similar for Indian and Anglo youth, since the rates of use were almost identical on all of the measures. However, it is likely that the problem of alcohol use is more serious than seen in these data because, as a school-based study, school dropouts were not included. Indeed, since Indian youth have higher dropout rates than Anglo youth, it is possible that the similar use rates reported for the 12th graders are due to the loss of high-risk Indian youth from the sample (Beauvais et al. 1996).

Based on the studies represented in literature, what can we say about alcohol use among urban American Indians? From the two field studies, Graves (1971) and Spicer (1995), we learn that a segment of the urban Indian population has serious problems with alcohol and that, indeed, alcohol is the central organizing theme of their lives. Both researchers concluded that for this group, drinking seems to function as a means of group involvement and is more related to struggles for survival in the urban environment than to some form of psychopathology. However, Weibel-Orlando and colleagues (Weibel-Orlando 1984) and Gill and colleagues (1997) pointed out that Indians with chronic alcohol-related problems make up only a subset of the urban Indian population and that, overall, Indian drinking patterns are varied. Barker and Kramer (1996) found little use of alcohol among their sample of urban Indian elders. The two studies of urban Indian youth indicate that in terms of alcohol use, many of these youth are at risk.

Walker and colleagues (1996) showed a higher risk of intoxication for boys, youth from families with alcohol-related problems, and those doing poorly in school. Compared with white and African American adolescents, Indian youth had a much higher incidence of having ever gotten drunk. Beauvais' (1992) finding that among 8th graders 35 percent had used alcohol and 16 percent had gotten drunk in the past 30 days indicates serious risk.

A major limiting factor of all of these studies is the lack of representative samples. With the exception of Beauvais' research, all of the studies used some form of convenience sample. The Barker and Kramer (1996) study was perhaps the most vulnerable because it used the personal contacts of the interviewers to locate and recruit elderly respondents. However, even Beauvais' sample was problematic because of lack of participation by some metropolitan school districts and because it did not include school dropouts who were likely at increased risk of problematic alcohol use. Therefore, we are left with various snapshots of drinking among specific groups of urban Indians, and we cannot generalize to other groups because of the potential nonrepresentativeness of the samples.

## TREATMENT

To gain an understanding of treatment issues for urban American Indians, it would be desirable to examine a range of treatment options, from outpatient programs for those with less serious alcohol problems to vari-

ous lengths of inpatient treatment for those with more serious problems. In addition, details regarding specific treatment approaches are necessary to truly understand treatment issues. However, as with the information regarding alcohol use among urban American Indian populations, the literature on their treatment outcomes is limited in volume. It also tends to focus primarily on those with the most serious problems. Only three urban areas—Los Angeles, Minneapolis-St. Paul, and Seattle—are represented in the literature. In all three cities, the patients described in the studies appear to be severe chronic drinkers similar to those described by Spicer (1995).

Westermeyer and Peake (1983) and Westermeyer and Neider (1984) studied American Indian adults living in Minneapolis-St. Paul. The sample of 45 had all been admitted for alcohol treatment in 1970 or 1971. After an average treatment length of 3 weeks in a hospital setting, American Indian alcohol counselors developed a followup plan for each patient. These plans included a range of options, such as continued residential care, use of a halfway house, Alcoholics Anonymous, and outpatient aftercare. Of the 45 patients, 21 complied with the followup recommendations. These articles report the results from a 10-year followup of these individual Indian patients, and other than the mention of Alcoholics Anonymous, no details are provided as to the approaches used either in the hospital settings or in aftercare. After 10 years, 9 of the 45 were confirmed as having died—all

from alcohol-related incidents or disease. Of the 36 presumed living, 33 were located and interviewed. Of these interviewees, 7 had improved in that they were self-supporting and were not experiencing difficulties from alcohol, 7 were unchanged and were still involved in episodic treatment, and 19 had gotten worse—their mental and physical conditions had deteriorated, and they were drinking more.

The factors that appeared to be associated with doing better were stable employment, close family relationships, and being older at the time of the original treatment. Also, those keeping closer contact with Indian kin and engaging in more traditional activities tended to have better outcomes. The authors concluded that more intense contact with one's own culture early on favors better outcomes among Indian alcoholics. These are important findings. However, it is also important to note that this was a very small sample of American Indians who had all been born and raised on reservations and later moved to the urban environment, rather than urban Indians born and raised in cities. All were diagnosed as alcoholic. Thus, again we are faced with lack of generalizability.

In the Seattle Treatment Outcome Project, Walker and his colleagues (1989) looked at treatment outcomes for several voluntary samples of American Indians in the Pacific Northwest. Individuals from 39 tribes were represented in samples taken from detoxification, inpatient, halfway house, and outpatient alcohol treatment facilities.

In the detoxification portion of the study, 50 urban American Indians were interviewed during admission to a freestanding medical detox unit. Data were collected retrospectively for the year prior to the interview, and the participants were then followed for 2 years. Two-year data were available for 44 of the respondents. A total of 41 reported recent alcohol dependence symptoms or episodic alcohol abuse, and approximately 36 respondents during year 1 and 32 respondents during year 2 were readmitted to detox at least once. Respondents also spent an average of 18 days in other inpatient treatment settings during the 2-year period following their initial detox interview. Thus, these urban American Indians continued to experience serious alcohol-related problems throughout the followup period. The authors concluded that there was little evidence of successful treatment outcomes for this group.

The inpatient and halfway house portions of the study concentrated on a sample drawn from two Indian-specific programs, the Cedar Hills Alcohol Treatment Program ( $N = 44$ ) and the Thunderbird Halfway House ( $N = 46$ ). Both programs used Indian staff and incorporated American Indian cultural components. About 80 percent of this sample were followed over a 2-year period, and approximately one-half of the clients from each program returned to treatment. In addition, 91 percent of the inpatient and 84 percent of the halfway house patients reported continued alcohol abuse or dependence.

Since almost all of the detox, inpatient, and halfway house participants were chronic alcohol abusers and tended to be impoverished, highly mobile, unemployed, and disconnected from family supports, a sample of 150 outpatients from an Indian urban primary health care clinic were also interviewed. The point of this part of the study was to gain some information about the extent of alcohol problems from a group of Indians not selected specifically because they were receiving inpatient treatment. Of the 150 outpatients, 80 percent were drinkers at the time of the interview, 76 percent had experienced alcohol abuse symptoms, and 70 percent had suffered symptoms of alcohol dependency at some point in their lives. At the 1-year followup, there was essentially no change in the drinking behavior of the respondents, with the exception that 26 percent of the formerly abstinent or nonproblem drinkers had either abused alcohol or become alcohol dependent.

Walker and his colleagues concluded that for all of the samples in the study (detoxification, inpatient, halfway house, and outpatient), most of the participants acquired a record of multiple admissions to a variety of treatment facilities and programs. Recidivism was the rule and successful outcome the exception. They also indicated that few favorable outcomes can be expected from a treatment system in which the majority of clients are severely impaired, chronic alcoholics. Although not part of this study, this latter point would seem to apply to non-Indian treatment systems as well.

Weibel-Orlando (1984) studied five Indian treatment centers in Los Angeles, which all subscribed to the disease model of alcoholism and had strong ties to Alcoholics Anonymous. The goal of each program was to move individuals out of drinking roles and into a *life career* of total abstinence. The study involved systematic observation of counselor-to-client and client-to-client interactions, life and drinking history interviews, and observation and recording of program activities. Weekly 3-hour visits were made to the programs over a period of 1 year. In addition, two research team members volunteered as administrative aides and served 6-week internships, during which they observed and recorded daily program activities.

An interesting twist to this work is that Weibel-Orlando framed the process of alcohol treatment as a rite of passage that requires transition across boundaries from one status or life phase to another. As a rite of passage, alcohol treatment involves separation from the role of drinking, transition and resocialization into the role of abstinence, and reintegration into a community of nondrinkers. To function effectively, this process needs to be supported by both the individuals involved and the larger society. However, the application of the rite-of-passage metaphor to alcohol treatment was undermined by the failure of the participants to adopt its central thesis. The study revealed that many of the American Indians entered treatment with the intention of taking a break from drinking rather than giving up their old status of abuser of

alcohol. They tended to see treatment as a time to get healthy so that they could return to their drinking lifestyle; in other words, treatment was simply one phase of a cyclical drinking career. Thus, for many, neither the giving up of the alcohol abuser role nor the transition into the role of abstainer was taken seriously. This is indicated by the finding that the majority of the individuals entering the 90-day treatment programs stayed an average of 3 weeks, and approximately 90 percent returned to abusing alcohol.

The metaphor further breaks down at the community level when an individual completes treatment and attempts to return to society as a non-drinker. In general there is a lack of community support for this new status. The individual most often returns to an environment where family and friends continue to drink and where there is considerable peer pressure to join in the drinking.

Some of the implications of this study are as follows:

- Treatment programs should be realistic about the goal of total abstinence—a return to moderate drinking may be a reasonable goal.
- Treatment programs should create social settings that support the new status of nondrinking or reduced drinking, such as incorporating program graduates into halfway and independent living facilities that are associated with treatment programs.
- The treatment focus should be broadened to include American Indians who abuse alcohol but who

have not yet reached the chronic alcohol abuser stage.

## PREVENTION

As with the treatment literature, research reports addressing prevention with urban Indians are rare. Only three such studies were found. Parker (1990) reported on a pilot prevention study involving Rhode Island urban-based members of the Narragansett tribe. The project focused on teaching cultural traditions as part of the AOD use sessions of a 25-hours-per-week employment-training program. The participants, ages 14–19, included 9 Indian youth in the intervention group and 25 predominantly Hispanic and black youth in the comparison group. Although from different ethnic backgrounds, the youths in both the intervention and comparison groups were from similar income levels, lived in the same residential area, and were involved in similar employment-training programs.

Both the intervention and the comparison groups received an AOD intervention that was based on a commonly used curriculum called *Project Charlie* (Chemical Abuse Resolution Lies In Education). The major components of this curriculum were organized around self-awareness, relationships, decision-making skills, and chemical use in society. In addition to this curriculum, the intervention group received several cultural sessions that included learning American Indian handicrafts such as beadwork and moccasin making, listening to traditional stories, and learning about tra-

ditional subsistence practices. The intervention youth were encouraged to explore their own identities as American Indians through visits to museums and archaeological sites.

The evaluation of this pilot program included both standardized instruments and ethnographic interviews. Quantitative data were collected on frequency of AOD use, reasons for drug use, and self-esteem. The ethnographic interviews focused on the role and importance of culture as seen in knowledge of group and family traditions and participation in community activities. Parker indicated that there was a differential reduction in AOD use between the two groups and that there was a significant correlation between increased cultural affiliation and decreased AOD use. No difference was found between the two groups on self-esteem.

The ethnographic interviews produced general support for the inclusion of the cultural material; the participants indicated that they enjoyed the activities and that they gained an understanding of their heritage that they did not have before the program. Although the author concludes that this study supports inclusion of cultural perspectives in prevention efforts with urban American Indians, the study actually gives us very little useful information. The intervention group was so small that the power to detect changes was virtually nonexistent. Furthermore, the use of a nonequivalent comparison group consisting of non-Indians

essentially invalidates any use of the comparison group.

As mentioned earlier in this chapter, I conducted a study with urban Indian children in fourth through seventh grades in Denver to develop and evaluate a culturally appropriate alcohol prevention program (Moran 1998). A quasi-experimental comparison group research design was used to assess the effect of the afterschool program on selected mediator variables and on alcohol use among urban Indian youth. The conceptualization and structure of the program was a blending of the two sources of expertise. It built directly on the prevention research literature, and it also involved the local Indian community through a process of community meetings and focus groups. From the literature came the general approaches of correcting inaccurate stereotypes that overemphasize the amount of alcohol use, enhancing personal and cultural values that are in conflict with alcohol use, enhancing self-esteem, teaching a structured way for making good decisions, learning and practicing skills to resist peer pressure, and making a personal commitment to not use alcohol.

In order to address culture in a meaningful way, the local Indian community was systematically involved in identifying a unifying theme for the program. Meetings with various groups of Indian people were held to discuss what was needed in the community and to provide details about the study. This process resulted in a name for the project, the Seventh Generation. From an Ameri-

can Indian cultural perspective, this is more than just a name. Among the Lakota, who represent the majority of Indian people in Denver and the majority of the people involved in the meetings, the phrase refers to a time of healing, a time for Indian nations to come together. Today's Indian children are considered to be the seventh generation. Thus, using this name for an alcohol prevention program targeting American Indian youth was assumed to carry a fundamental message within the community.

A second meaning of the term derives from placing the children in the center of seven generations. For many Indian people this conceptualization fits well with prevention efforts. Namely, children must remember the wisdom of their elders (parents, grandparents, and great-grandparents) when making decisions, and they must also consider the impact of their decisions on those who will come after them (children, grandchildren, and great-grandchildren). This multigenerational view fits well with the concept of responsible decision making, and it became the focal point for much of the program.

In addition to the program's name, ideas expressed in the focus groups resulted in a plan to incorporate American Indian culture in a manner that might be meaningful to urban Indians. Over the course of several meetings an agreement emerged that a set of core values transcended tribal differences. After generating a list of more than 20 values, the participants narrowed the list to 7: harmony,

respect, generosity, courage, wisdom, humility, and honesty. These values are reflected in Indian cultural concepts such as the Medicine Wheel of the Northern Plains or the Navajo statement *Walk in Beauty*. Thus, rather than using cultural artifacts such as teaching children Indian arts and crafts, the Seventh Generation Program was developed in a manner that focused on cultural values. The program consisted of a 13-week intervention followed 6 months later by a 5-week booster. The afterschool program was divided into seven main topical areas (e.g., enhancing Indian identity, decision making, and making a meaningful commitment), and each of the 2-hour sessions focused on the particular topic for that week in addition to several of the seven core values.

Across three intervention periods, a total of 257 fourth through seventh grade Indian children participated in the intervention, and a total of 121 served as the comparison group. Pretest, posttest, and 1-year followup data were collected on several mediator variables and on alcohol use (Moran and Reaman 2002). The intervention and comparison groups were not statistically different at either pretest or posttest; however, several significant differences were noted at the 1-year followup. At 1 year, the intervention group scored more favorably on measures of structured decision making, had less positive beliefs about the impact of alcohol use, had less depression, had higher levels of school bonding, had more positive self concept, and had higher levels of



perceived social support. In addition, only 5.6 percent of the intervention group as compared with 19.7 percent of the comparison group reported drinking in the past 30 days, chi-square (1,  $n = 168$ ) = 8.034,  $p = 0.006$ .

The importance of these findings is supported by an examination of pretest scores for the comparison group and the subset of the intervention group with 1-year posttest data. The differences at pretest were minimal, with the intervention group scoring more favorably at a statistically significant level only on measures of decision making and Indian identity. In other words, while there was some indication of selection bias, it appeared to be minimal.

Schinke (1999) reported on a study of alcohol prevention with 225 American Indian youth between 8 and 14 years of age. Participants were recruited through urban Indian centers located in New Haven, Connecticut; Boston, Massachusetts; New York City; and Providence, Rhode Island. Sites were randomly assigned to skills intervention, family-enhanced skills intervention, or the control condition. Skills intervention curricula consisted of 15 sessions that addressed knowledge about and patterns of alcohol use and abuse; attitudes toward alcohol abuse; behavior changes through culturally specific and other alcohol-free social activities, and skills for resisting or avoiding alcohol use. Indian traditions that promote alcohol-free lifestyles were emphasized throughout the curricula.

Participants assigned to family-enhanced skills intervention received the skills curricula and also took part in six additional sessions with their parents and other interested family members. In day-long family sessions held once a month, leaders reviewed content delivered in the skills intervention and conducted role plays with youths and their family members around alcohol abuse prevention content. Family-enhanced skills intervention sessions also included presentations by professional alcohol abuse prevention workers. Indian cultural activities, such as storytelling or music, further reinforced alcohol abuse prevention content. Each family session culminated in a community-wide, alcohol-free social.

At pretest, posttest, and followup measurement occasions, data were collected regarding youths' current and previous AOD use (including tobacco) in the last 12 months; knowledge of friends' AOD use; degree of willingness to keep friends from using AODs, and vice versa; access to AODs; and sensitivity to harmful effects of differing levels of AOD use. In addition, the study measured youths' attitudes about their family, friends, and school; self-perception; experience of physical abuse; and family participation in American Indian culture.

Outcome data revealed that youths in both intervention conditions reported less drinking at followup than youths in the control condition. Compared with youths in the control condition, youths in each intervention condition reported less drinking over

the last month and 12 months, were less likely to have gotten drunk in the last month and 12 months, and were more likely to report themselves as "nonusers" of alcohol.

Although limited in number, these studies are promising, and they lend some support to the inclusion of cultural components in prevention work with urban Indian youth. It is important to note that the Denver study operationalized culture as a set of values that transcend tribal differences, in comparison with the arts and crafts approach of Parker's Rhode Island study. Schinke's addition of the family-skills enhancement component also appears to be promising.

## DISCUSSION

In this chapter I have reviewed the literature regarding alcohol use, treatment, and prevention among American Indians who live in urban areas. I began by noting that a focus on urban populations is particularly important because the intensive governmental effort spanning over 100 years to move Indians off reservations and into the mainstream of American society has resulted in the majority of Indians now living in urban areas. If we are to understand Indian alcohol-related issues, we need to understand the experience of urban Indians.

Despite this shift in population demographics, most research has been carried out with reservation-based Indian populations, and only limited work has been done in urban areas. There have been no large-scale epidemiologic studies carried out among

urban Indians, so what we know is based primarily on nonrandom samples of Indians living in specific cities. Much of the attention has focused on the segment of the population that has the most serious problems. The studies by Graves (1971), Spicer (1995), Westermeyer and Peake (1983), and Westermeyer and Neider (1984) concentrated entirely on urban Indian populations with chronic alcohol problems. Walker's (1981) treatment outcomes work and much of Weibel-Orlando's (1989) work did also. We can discern from these studies that for those with the most serious alcohol problems, alcohol is the dominating force in their lives. It also appears that for this group, drinking seems to function as a means for group involvement and may be more related to struggles for survival in the urban environment than to some form of psychopathology.

Despite the seriousness of the problems for this group, Weibel-Orlando (1989), Barker and Kramer (1996), and Gill and colleagues (1997) pointed out that Indians with chronic alcohol-related problems make up only a small subset of the urban Indian population. Westermeyer (1996) indicated that the Indian elder drinking patterns reported by Barker and Kramer are not much different than those of the elderly in the general population.

The studies of urban Indian youth are cause for more serious concern. The results reported by Walker and colleagues (1996) and Beauvais (1992) indicate that urban Indian youth are at risk of alcohol-related problems and that they tend to start drinking

younger and have more serious consequences than non-Indian youth.

As might be expected, the literature on treatment again concentrates on those with the most serious problems. Perhaps the best summary of this literature comes from Walker and his colleagues (Walker 1981; Walker et al. 1989), who concluded that recidivism was the rule and successful outcome the exception. They also point out that favorable treatment outcomes are not to be expected when the majority of clients are severely impaired, chronic alcoholics. Weibel-Orlando (1984) took this a step further by indicating that the current structure of treatment programs may actually support the chronic alcoholic by providing a "time out" in which to get healthy before returning to an alcohol-abusing lifestyle.

The literature on prevention programs with urban Indians is even more limited than that focusing on treatment. The three studies reported here (Parker 1990; Moran 1998; Schinke 1999) provide results that are promising but are limited by sample size and nonequivalent comparison groups. All three studies included cultural components. However, whereas Parker conceptualized culture as historical Indian arts and crafts, I defined culture as a set of values that members of Denver's Indian community indicated outweighed tribal differences and provided current meaning to the concept.

What is clear from this summary is that much work remains if we are to increase our understanding of alcohol use, treatment, and prevention among

urban American Indian populations. Some of the key unanswered questions are as follows:

- What are the patterns of alcohol use among urban Indians?
- What does it mean to be an urban Indian, and how is that related to alcohol use, treatment, and prevention?
- Since many urban Indians live in two worlds, their tribal culture and the dominant culture, is there really a need for Indian-specific treatment and prevention programs in urban areas?
- Can urban Indians be well served in mainstream programs?
- If Indian-specific programs are necessary, what should they look like given the multitude of tribes that are present in most urban areas?
- What makes a program an Indian program?
- How can Indian-specific programs be delivered efficiently to urban populations that are widely dispersed?
- What approaches are most effective—individual, family, school, or community?

To address questions such as these, researchers need to be sensitive to cultural differences; we must pay attention to the issue of *cultural competency* (Cross 1988; Cardenas 1989; Orlandi 1992). Green (1982) clarified this concept by pointing out that being culturally competent means conducting one's professional work in a way that is congruent with the behaviors and expectations that members of a

cultural group recognize as appropriate among them. It does not mean that researchers should attempt to conduct themselves as though they are members of the group. Rather, they must be able to engage the community and demonstrate acceptance of cultural difference in an open, genuine manner. It should be noted that in urban Indian communities, this task becomes even harder because of the presence of multiple tribal and cultural groups.

A basic step in this process is that researchers must become involved with the target community in a manner that allows for the acquisition of meaningful cultural knowledge. Since the culture of each urban area varies, depending on the mix of tribal groups, there is no substitute for direct and extended involvement with the community of interest. This involvement does not need to occur in a vacuum; rather it can transpire as part of the research process. In other words, in approaching a community respectfully, an alert researcher can gain some of the necessary cultural knowledge.

To accomplish this, Beauvais and Trimble (1992) pointed out that the first step is to describe the intent, nature, and benefits of a possible project before the governing body. On reservations identification of the governing body is clear-cut and is usually the tribal council. However, urban Indian communities do not have a governing body. For research purposes, a parallel step might mean meeting with a group composed of representatives from the major Indian organiza-

tions. Recognizing that formal organizations do not necessarily represent all urban Indians, community meetings open to all Indian people could be used to explain the purpose, costs, and benefits of the research.

It is important to note that the purpose of such meetings is both to show respect for the community by telling them about the proposed research and, equally important, to obtain feedback from the community. A key point in this process is the recognition that the community's ideas and the researcher's ideas are both important—the definition of problems and the goals of the research should involve the community in a meaningful way. A critical point of this process is to gain the sanction of the community. Without formal or informal sanction, researchers will always be seen as outsiders and hence be frustrated in further attempts to establish credibility.

An example of this is another research project I conducted in the Denver urban Indian community. The purpose was to examine barriers encountered by Indians in their use of human service agencies. In designing the study, I proposed that a sample of Indian people be interviewed concerning their experiences in attempting to obtain services. Following the procedures outlined above, I presented this idea to a group of Indian people, including several formal and informal leaders from the community. The response was that *Indians have been studied enough! If you want to find out about agency barriers, go talk to the agencies.* Thus, sanction for the origi-

nal proposal was not obtained from this community group.

I followed their advice and modified the study to begin by interviewing a sample of agencies used as referral sources by the major Indian community agency. Endorsement for this new approach was obtained from the community group. The agencies identified several barriers such as lack of transportation, inadequate child-care, and limited resources. More importantly, once I reported these general findings to the community group, several individual Indian people agreed to provide input into the study. The key to carrying out this research was obtaining community support by asking for and accepting guidance from the community.

In addition to gaining entrée, researchers involved in urban Indian communities face other significant barriers. Urban researchers are faced with Indian populations that are

- extremely small as a percentage of the total urban population—generally making up less than 1 percent of the total population;
- widely dispersed and not easily accessed;
- made up of individuals from many different tribal groups;
- predominantly of mixed blood heritage—raising the issue of who really is an Indian; and
- involved in the community to very different degrees, from immersion to self-exclusion.

These are significant barriers to carrying out valid and reliable

research. Because of these barriers, researchers should expect and plan to spend extra time and money on such things as recruitment and transportation. The geographic dispersion combined with different levels of participation makes obtaining representative samples very difficult. Methods such as household surveys are impossible at worst and inefficient at best. The alternative of recruiting at cultural events such as pow-wows eliminates a substantial portion of the population that does not participate in such events. The mixed-blood heritage issue means that using methods such as key informant interviews with *visible* Indians excludes a large part of the population from consideration. Interviewing community leaders and those involved in Indian agencies might mean limiting the sample to the small percentage of the Indian population that is immersed in community activities.

## CONCLUSION

As it stands, we do not know very much about alcohol use, treatment, or prevention among American Indians who live in urban areas. It is clear that to move beyond this point we will need to address the specific barriers to carrying out research in urban Indian communities. There are no easy answers to these problems. However, to move ahead we must carry out our research in a culturally competent manner. In addition, part of the process of discovering how to deal with the specific barriers is to involve the community in the actual research process from start to finish (Davidson 1988). To the extent

possible, community members should be employed as part of the research team. This team should then meet as a group throughout the process of the research to determine and monitor the specifics of implementation, explanations to the community, and reporting of results. This dual process of paying attention to cultural competence and involving the community offers the best hope of gaining the knowledge that is currently lacking in regard to alcohol use, treatment, and prevention among urban Indians.

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**SPECIAL AND EMERGING  
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## Chapter 12

# HIV/AIDS and Alcohol and Other Drug Abuse Prevention in American Indian Communities: Behavioral and Community Effects

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*KEY WORDS:* Native American; HIV prevention; acquired immunodeficiency syndrome (AIDS); AOD (alcohol or other drug) prevention; culturally sensitive prevention approach; school-based prevention; program evaluation; prevention program; curriculum; AOD education; adolescent; AOD use behavior; health promotion; sexual behavior; risk-taking behavior

In this chapter we report formative and outcome research findings from a prevention project conducted with American Indian communities in Ari-

zona from 1990 to 1995. The formative research included finding ways to create a shared prevention vision, to develop scientifically sound and cul-

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turally relevant intervention materials, and to sustain the interventions in local organizations and social contexts. The outcome research included the effects of the preventive interventions on local environments and on the 8th, 9th, and 10th grade youth who participated in the project.

## HISTORICAL CONTEXT

The research we present should be viewed in its historical context. When the project was planned in the late 1980s and initiated in 1990, rural communities had not yet fully experienced the AIDS epidemic. No AIDS preventive education was being conducted in the local Indian Health Service clinics. The Arizona public school system and schools funded by the Bureau of Indian Affairs had yet to mandate AIDS and sex education for the public schools. Furthermore, local schools had no comprehensive health education curricula, although there were numerous types of single-topic curricula used to address community public health issues (alcohol, family planning, etc).

During the late 1980s, cases of AIDS began emerging locally. As with urban areas, there were significant local risks for behavioral transmission of the human immunodeficiency virus (HIV) in Arizona's rural reservations. These risks included high prevalence rates of alcoholism and alcohol and other drug (AOD) abuse among both adults and youth; high rates of alcohol-related risk behaviors, such as drinking to intoxication, "blackouts," driving under the influence, and con-

current use of AODs; and, for some problem drinkers, sex in exchange for AODs in the bordertown bars (Heidenreich 1976; May 1982; Beauvais and LaBoueff 1985; May 1986; Young 1988; Beauvais 1992*a*, 1992*b*, 1992*c*; Cole et al. 1992; Mail and Johnson 1993; May and Moran 1995; May 1996). Furthermore, our research project's communities were located in areas of Arizona where contact occurred daily between local people and many visitors from across the United States and other parts of the world (e.g., tourists, interstate truckers, and rail-freight workers on cross-national trips).

In the early 1990s, the greatest increase in HIV rates among American Indians was occurring in rural and bordertown areas (Metler et al. 1991). This may have been a function of many rural Indians regularly moving to urban areas for jobs, as well as off-reservation binge drinking and sexual contact with high-risk individuals, at which time exposure to HIV infection occurred. Those Indians who worked in cities also generally maintained close ties with family on the reservation, visiting often (Sullivan 1991). Such rural-urban circular migration may have provided a route for the spread of HIV to rural reservations.

During the late 1980s and early 1990s, members and leaders of local American Indian communities began to realize that it was a matter of time before HIV/AIDS became a serious public health concern. They knew well the devastating social and cultural impacts caused by other health-related problems for Indian communities (e.g., alcoholism, AOD abuse,

unplanned pregnancy, and sexually transmitted diseases [STDs]). Thus, they sought out the assistance and support necessary to address issues and concerns about HIV/AIDS among American Indian youth.

Innovations and bold local leadership for HIV/AIDS prevention were needed, as well as organizational changes and adaptations of perceptions in order to develop and sustain effective youth- and community-oriented prevention programming. In collaboration with many community groups, this research project achieved many positive changes, and many urban-born preventive intervention technologies were successfully transferred with adaptations to local customs and cultures.

## THE NAPPASA PROJECT

This research project came to be known as the Native American Prevention Project against AIDS and Substance Abuse (NAPPASA). Drs. Jon Rolf and Julie Baldwin served as co-principal investigators for a multidisciplinary project team. They were invited by local leaders to explore options for funding, developing, and sustaining prevention programs for American Indian youth living in Arizona reservations and bordertowns. The NAPPASA project was primarily funded by a grant from the Prevention Research Branch of the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Additional funding came from the Foundation for AIDS Research, the Center for Substance Abuse Prevention, and individual donors.

As a 4-year rural prevention services project, NAPPASA became the first theory-based American Indian HIV/AIDS and AOD abuse prevention program with sustained school and community components. The school-based prevention services included comprehensive and holistic school curricula for junior and senior high youth. The community services involved educational and networking outreach to communities on two reservations and in a number of bordertowns.

As a research project, NAPPASA was designed to develop interventions and evaluate their preventive effects on AOD abuse and risky sexual behaviors among both American Indian adolescents and their non-Indian peers. The project team was composed of a group of Johns Hopkins University public health scientists working in partnership with local educators, health providers, community leaders, and youth from more than a dozen communities in or near American Indian nations in Arizona. The project also facilitated diffusion of its prevention programs to Washington State. The Johns Hopkins researchers were guided by a local advisory board and a number of scientific consultants who generously helped the team conduct the best possible research project in Indian country. These consultants included Drs. Fred Beauvais (Colorado State University), Jeannette Johnson (University of Maryland at Baltimore), Spero Manson (University of Colorado Health Sciences Center), Steven Schinke (Columbia University), and Robert Trotter II (Northern Arizona University).

Although the researchers knew of no other instance of a research program combining HIV/AIDS and AOD abuse prevention for American Indian youth, such a program seemed efficacious from a conceptual standpoint, since risky behaviors tend to occur in conjunction with each other. The research literature has subsequently supported this (e.g., Wulfert and Biglan 1994). AOD use has specifically been found to be correlated both with increased sexual activity and increased high-risk sexual behavior (Ross and Simon Rosser 1989; Sullivan 1991; Lowry et al. 1994; Rotheram-Borus et al. 1995).

An approach linking HIV/AIDS and AOD abuse prevention also had the potential to be both locally relevant and cost-effective. AOD abuse prevention was already a top priority in NAPPASA's host communities. In planning NAPPASA, community leaders began to think that HIV/AIDS was yet another way that AODs can kill. A combined HIV/AIDS and AOD abuse prevention approach also appeared to be cost-effective to these planners, since the behavioral skills that are taught to reduce one type of risk may be applied to avoiding other types of risky behaviors and situations.

#### ADAPTING NAPPASA TO LOCAL CULTURES THROUGH FORMATIVE RESEARCH

Jon Rolf (1995) has described in detail how the community people helped the research team create and sustain a productive cross-cultural prevention research partnership. As described in that monograph chapter,

local input about "ways of doing things" shaped every aspect of the research project. At the outset, it was essential to search for a shared cross-cultural prevention vision, but there was an immediate formidable barrier to such a vision. *Research* was not a positive concept for the majority of the Indian people in the project's host communities, owing to a long history of externally planned and controlled studies that were perceived as taking away more than they gave back to the local communities. Therefore, for the NAPPASA project, the basic precondition would be *giving more* (in preventive services) *than taking away* (by collecting data and local knowledge).

One step toward overcoming the stigma of externally controlled research was to tell and retell how local leaders and community people approached and invited NAPPASA to come and work together. In fact, a local school board together with several Indian Health Service practitioners had invited the Johns Hopkins public health scientists to come to the reservation communities to discuss a collaborative HIV/AIDS and AOD abuse prevention effort for local youth. The response to being invited by locals was positive and encouraging. Project staff traveled to one of the tribal nations to become the catalyst for the first multicommunity-based HIV/AIDS prevention meetings to be held there, and then responded to the communities' request to secure external funding to develop local programs. Dr. Rolf initially obtained pilot funds from the American Foundation for AIDS Research and later was awarded

major funding from NIAAA for a preventive intervention research project.

With funding secured, the next step in finding functional ways to implement the shared prevention vision was partnering with local leadership to shape and own the project's prevention programs. The formative research agenda called for local input, and this expanded into a major project component—one the researchers came to call *listening to what the people have to say*. This step entailed listening through key informant interviews and focus groups with local educators, elders, health service providers, and community people (including teenagers). The initial focus groups were conducted to get ideas for and evaluations of our prototype school-based prevention curricula. However, they were continued as an important way for community people to monitor project staff and program plans.

*Being there* was another important process for showing respect, building mutual respect, and proving the sincerity of the researchers' commitments to local customs and ways of doing things. Indigenous staff provided a vehicle for noninvasive participation in social and cultural events. Also, through the production of local prevention videos, NAPPASA showed the project staff working, collaborating, and celebrating with local people.

As local input and visibility were sought, there were questions about the viability of the enormous effort required for a cross-cultural prevention partnership. Justification for the effort was found in the goal of training local people in prevention tech-

nology skills, the funding obtained and that to be sought, and especially the fact that the researchers had already created useful HIV/AIDS prevention programs for other communities. Local interest in partnering would *not* have occurred if the community perceived that the researchers thought that Indian communities were at higher risk than elsewhere in the United States, had a paternalistic agenda, were acting on a stereotypical perception of a drunken Indian community, or valued research data more than preventive human services.

## METHODS

### THEORETICAL MODEL

The project developed a preventive intervention model that was based on an integration of scientific theories of behavior change, including social action theory (Ewart 1991) and social cognitive theory (Bandura 1986). An interpretation of theoretical perspectives was sought because the model needed to

- be compatible with both American Indian indigenous holistic health belief systems and mainstream biomedical views of health and illness;
- have relevance to the developmental issues of its adolescent intervention target groups;
- address directly the values, beliefs, and attitudes of the recipients within the contexts of their socio-cultural systems;
- help effect preventive innovations in school and community environments;

- promote risk-reduction skill development in the health behaviors of individuals in their normal day-to-day action contexts; and
- show promise in altering existing peer norms of health risk behaviors.

For more detail on how this integrative prevention model shaped the school prevention curriculum content and processes, see Baldwin et al. (1996).

A significant challenge to getting Federal grant funding for the NAP-PASA project was convincing scientific peer reviewers that rural American Indians were at risk for HIV and that current prevention theory and methods could be successfully used in American Indian community settings. The alcohol abuse epidemiology was convincing, and programs based on social learning theory had previously been successfully adapted for use in various preventive intervention projects with American Indians (Dinges et al. 1974; Gilchrist et al. 1987; Schinke et al. 1988). The relevance of prevention technology has been suggested by various prevention-oriented researchers concerned about mental health and AOD abuse risks among American Indian youth (Schinke et al. 1985*a*, 1985*b*; May 1986; Schinke et al. 1986; Bobo et al. 1988; Oetting et al. 1988; Herring 1994; May 1995; Rolf 1995).

In general, prevention experts recommend designing interventions that not only target high-risk youth individually but also address key people in their school, family, and community contexts as collaborative partners in intervention development and implementation. They also caution against

bringing in brief, externally developed programs. Not only do such short-term, "one-shot" programs not work, they are highly resisted by American Indian communities because these communities see the need to embed prevention programming into the fabric of the daily life of youth (Bobo et al. 1985; Carpenter et al. 1985; Rolf 1995). Thus, a multifaceted prevention program was thought to be most relevant for American Indians if it was interesting, addressed local concerns without stimulating political divisiveness, and was delivered collaboratively with community people and organizations in culturally appropriate ways.

#### DESIGN OF THE SCHOOL-BASED INTERVENTIONS

NAPPASA implemented and evaluated field trials of its school-based preventive interventions from the fall of 1990 to the spring of 1994. These field trials were conducted as a series of quasi-experiments involving comparisons between longitudinal 8th and 9th grade intervention cohorts and non-intervention cross-sectional comparison subjects drawn from the 8th, 9th, and 10th grades.

The grant proposal for the project had specified only a 9th grade intervention. However, the baseline prevalence of AOD use before the 9th grade, combined with the recommendations of the NIAAA initial review group and our local advisors, prompted the inclusion of an 8th grade intervention as well. Thus, NAPPASA's preventive interventions in the schools involved (1) an 8th grade curriculum, (2) a different (but compatible) 9th



grade curriculum, or (3) a 2-year sequence in which the 8th grade junior high program was reinforced and extended by the 9th grade high school program. Participation in each intervention was a function of the student's choices of junior and senior high school.

Students who participated in either the 8th or the 9th grade worked with an action-oriented curriculum consisting of twenty-four 50-minute class sessions designed to promote new skills, knowledge, and motives. Students receiving both the 8th grade plus the 9th curriculum had a total of 48 sessions. There were additional "booster" interventions beyond the 5 weeks it typically took to complete the curriculum at one session per schoolday. These boosters involved NAPPASA-produced videos and print media, dormitory activities, and community meetings.

Each curriculum was implemented with standard procedures by NAPPASA-trained instructor pairs. Typically one was male and one female, and one was a regular schoolteacher while the other was recruited from the community. The fidelity of intervention implementation (e.g., the curriculum sessions' content and process) was monitored by NAPPASA staff. Informed consent was obtained from all participating students, their parents, the elected school boards of the 14 host schools and boarding dormitories, and the local community health advisory boards.

The school programs were also supported by extensive community outreach and communication media

products that were designed to be culturally sensitive and implemented in the context of American Indian health beliefs and values.

### THE NAPPASA PREVENTION CURRICULA

The NAPPASA project developed and evaluated its prevention curricula from 1990 to 1995. Baldwin and colleagues (1996) described the cyclical process whereby the research team, consultants, local advisors, and community educators shaped the prevention curricula from prototypes, to pilot versions, and finally to the standardized versions used in the field trials. In the first year of the project (1990-91), the research team focused on developing and piloting components of the school, community, and media intervention and evaluation programs. Figure 1 briefly summarizes the basic process.

The team began with a prevention model and prototype curriculum elements. Next, local input was obtained from working sessions with the project's advisors and consultants, as well as from focus groups with students and teachers. Project staff conducted interviews and focus groups (separate gender) with local junior high and senior high school students and with adults (both genders together) to identify culturally relevant approaches to AIDS and AOD abuse prevention topics. This input was used to write a draft curriculum that was true to the theoretical model, had the appropriate content, and was structured by desirable educational processes and culturally sensitive and acceptable ways of

doing things. In the next stage of the process, the investigators conducted field tests (piloting) by first training instructors and then applying the curriculum in a field setting representative of the intervention schools and communities.

Considerable effort was given to creating curriculum materials and activities appropriate to existing norms and communication practices. The aim was to create culturally sensitive, non-embarrassing content that could be functional and owned by community schools.

### INSTRUCTOR TRAINING

The NAPPASA AIDS/AOD education curriculum was designed to be taught by regular classroom teachers responsible for health education with assistance by project co-instructors. The project team conducted training for these paired instructors in a workshop retreat setting. Each school's instructors received 2 days of training by Johns Hopkins staff and consultants. Each instructor was provided with his or her own copy of the following items:

- the Instructor's Manual, including session objectives, descriptions of required activities and materials, and scripts for instructor's presentations and discussion questions;
- the Student's Manual, along with cross-references between the Instructor's Manual and the Student's Manual session activities;
- required session logs and process evaluation forms with information on how and why they must be used to document program delivery;
- updated supplementary information packets containing HIV/AIDS and AOD facts plus local referral agencies.

Also during the training workshop, the instructors were given NAPPASA's history, rationale, and recent findings of behavioral risks and beliefs among the local youth; shown videos of the program in action in local schools; reinforced for active participation in workshop discussions; and encouraged to see ways the program fit into their own schools' and communities' health agendas.

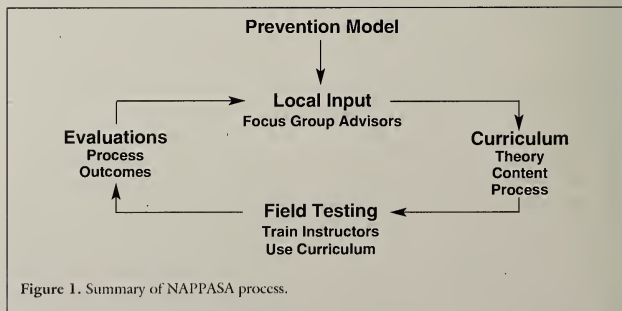


Figure 1. Summary of NAPPASA process.

The 8th and 9th grade curricula applied prevention educational processes that Hansen (1992) cited as common among effective prevention research projects. Each curriculum provided interesting information, decision-making processes, resistance and life skills training, values clarification, personal and group goal setting, self-esteem building, peer and school norm-changing experiences, identification of attractive lower risk alternatives, and persistent assistance by instructors with reinforced practice via frequent role-playing activities. The following topics were contained in each curriculum:

- concepts of health, illness, and prevention;
- AOD facts and issues (alcoholism; fetal alcohol syndrome; dependency; keeping safe; how AOD use can increase risks for health and social problems for individuals, families, and communities; and communicating about these topics);
- basic reproductive biology; sexuality; STDs; how diseases, including HIV/AIDS, can be transmitted during sexual intercourse; and how assertive communication skills can prevent unwanted sex, pregnancy, and STDs;
- HIV/AIDS (transmission, prevention, global-local epidemic impact, women's issues, and treatment); linking AOD to HIV; cultural and family values, laws, and rules;
- decision-making skills (using the SODAS paradigm—"Stop, Options, Decide, Act, Self-Praise");
- healthy options;

- self-esteem;
- social skills;
- coping with pressures; and
- reinforced practice and role plays.

Both the 8th and 9th grade curricula were presented to the schools as an integrated package containing the following elements:

- NAPPASA's Instructor's Manual (approximately 330 pages): 24 scripted sessions on AIDS; AOD abuse; STDs; sexuality and reproduction; similarities and differences in American Indian and Anglo American concepts and practices concerning health, illness, and preventing illness; and the importance of participatory training in prevention skills.
- NAPPASA's Student's Manual (approximately 70 pages): session topics and activities keyed to the Instructor's Manual.
- 9 or 10 videos for each 8th/9th grade curricula produced by NAPPASA or edited from other sources with permission to provide local contexts and role modeling for specific prevention topics.<sup>1</sup>

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<sup>1</sup> Jeannette Johnson, Christine Benally, and Julie Baldwin have readied the 8th and 9th grade curricula for national diffusion with additional support from the Center for Substance Abuse Prevention. Each of these diffusion curricula contains 20 content sessions with very easy to use and visually interesting Instructor's and Student's Manuals. The NAPPASA curriculum manuals are readily adaptable to local needs and are available at no cost via the World Wide Web in Acrobat PDF formats for downloading and local printing. This master copy can be freely copied locally to produce the needed number of manuals for schools, youth clubs, or community groups.

## PROJECT EVALUATION

In partnership with local educators and community people, prototype curricula and evaluation instruments were developed and piloted at two schools. Pre- and post-intervention evaluations along with additional focus groups with pilot study students and instructors led to refinements in the evaluation measures. School program assessments for 8th and 9th graders involved pretest, immediate posttest, and followups. The followup assessment intervals differed between the grades, because the 9th grade curriculum started in the fall of the academic year and the 8th grade curriculum started in the spring semester. There was a 3-month followup (8th graders) or a 6-month followup (9th graders), and an 8-month followup (8th graders) or a 1-year followup (9th graders). This staggering of the two grade levels of intervention enabled the small staff to work in the junior and senior high schools in the spring and fall semesters, respectively.

Both outcome and process evaluations were conducted. Outcomes were defined as *impact variables* targeting shorter term effects of the intervention programs (e.g., knowledge, perceptions of personal risk, self-efficacy beliefs, perceived loss of future options) and *behavioral outcomes* targeting longer term effects of the intervention (e.g., peer group norms of AOD use and HIV-risking behaviors, and self-reports of personal AOD use and HIV-risking behaviors).

Process evaluations were also undertaken at key times to (a) detect

barriers to program implementation and (b) document the extent of satisfaction with and cultural relevance of the preventive programs and their accompanying evaluation methods. Curriculum instructors completed immediate posttest questionnaires during the curriculum. Instructors and students also participated in postcurriculum focus groups to inform project staff about what had worked well and what curriculum content or process needed improvement.

## DATA COLLECTION

Longitudinal data were provided non-anonymously by the intervention condition participants and some of the non-intervention comparison participants. The students completed a standard AOD use questionnaire at baseline, with selected items repeated at posttest and followups. The American Drug and Alcohol Survey (Beauvais and Oetting 1991) was chosen because it was being widely used across the United States with youth, including American Indian communities. A second questionnaire, NAPASA's Health Behavior Survey, was also administered. This questionnaire contained knowledge, attitude, and behavioral questions on non-AOD topics, including sex, HIV/AIDS, STDs, self-efficacy beliefs, self-concepts, peer norms for risk behaviors, types and frequencies of peer-peer and teen-adult communications, and cultural identification.

The Health Behavior Survey items were obtained from previous work with adolescents at risk for AOD abuse and HIV/AIDS (Baldwin

1990; Rolf et al. 1991). Extensive piloting with local youth assured that each question item was understood and that response options were meaningful and relevant to the students. Topically related item sets were subjected to scaling analyses to detect meaningful factor structures. Scale scores used in analyses all had good internal consistencies with Cronbach's alphas, exceeding 0.80.

NAPPASA's primary data collection strategy was youth self-reports. Truthful responses were encouraged at several levels—the informed consent form, the verbal instructions given to students about how to complete the questionnaire, written instructions within specific sensitive questions, and at the end of each questionnaire via self-ratings of "truthfulness in answering" the questions about AOD and sex. The informed consent emphasized a certificate of confidentiality, and the project team assured students that their answers would not be seen by a parent or anyone at the school or in the community. Verbal instructions emphasized that the questionnaire was an opportunity to answer important questions about oneself truthfully; if anyone could not be truthful, it would be better to skip the question. Sensitive items about sexual behavior included the response option, "I prefer not to answer." Finally, students were asked to rate the truthfulness of their answers as "completely honest," "very honest," "fairly honest," "not very honest," or "not at all honest." The overwhelming majority reported being completely or very honest. Persons responding "not very honest" or "not at all honest"

(approximately 2 to 3 percent) were omitted from statistical analyses.

### STUDENT PARTICIPANTS

A total of 3,335 Arizona students participated in the project in some capacity during the 3 years, receiving either 1 or 2 years of the curriculum or participating as non-intervention comparison subjects. Within the host schools, subject recruitment rates averaged 95 percent of all students enrolled in the relevant grades. However, students in this area had a high rate of family mobility and shifting youth residence for schooling (e.g., living with an aunt/uncle or grandparents, or boarding in dormitories to attend a specific school). This resulted in a decrease in the number of those students remaining in the intervention schools at the subsequent year's followup assessment.

Subjects were grouped for analysis by grade and intervention condition. This chapter uses data from 8th and 9th grade intervention subjects along with 8th, 9th, and 10th grade cross-sectional comparison subjects. Subjects eliminated from the data set included those who reported that they were either "not very honest" or "not at all honest" in completing the questionnaire, those outside the target grade range, those who were missing data regarding their treatment group, those whose followup assessments could not be reliably linked to baseline assessments, and those who had the pilot study curriculum. This resulted in a final data set consisting of 2,704 subjects—2,038 intervention and 666 comparison. Among the intervention condition subjects were 790 stu-

dents having the curriculum during 8th grade, 1,021 having the curriculum during 9th grade, and 227 having the curriculum during both grades.

Approximately 77 percent of the subjects were self-identified as American Indian or American Indian plus other, while 7 percent were Hispanic/Mexican American, 12 percent were non-Hispanic Anglo American, and 4 percent were African American or other. A nearly equal number of females and males (48.8 percent and 51.2 percent, respectively) were included in the data set.

## RESULTS

### BASELINE RATES OF RISK BEHAVIORS

Analyses of the NAPPASA 8th and 9th grade baseline data indicate that many

students at this age were already involved in high-risk behaviors. Table 1 provides the percentages of students involved in selected risk behaviors at 8th and 9th grade baselines. Note that at 8th grade baseline, almost two-thirds of all the students had already tried alcohol, over one-third of all the students had already been intoxicated at some time, almost one-fourth were non-virgins, and almost half of the non-virgins had engaged in sexual intercourse while drunk or high.

### ASSESSMENT OF PROGRAM EFFECTS

The outcome analyses in this study were directed at answering the following basic question: What effects did the intervention (8th grade, 9th grade, or 8th + 9th grade) have on health-risking behaviors at long-term

Table 1. Baseline Rates (%) of Risk Behaviors.

Risk Behavior	8th Grade Students			9th Grade Students		
	All	Males	Females	All	Males	Females
Have consumed alcohol	62.4	64.9	59.7	67.0	66.6	67.5
Have been intoxicated	37.1	38.4	35.7	46.3	48.5	44.0
Have used marijuana	31.9	38.1	25.4	40.9	44.3	37.4
Have had sexual intercourse	22.8	28.9	16.2	30.9	34.9	27.0
Have had sex while drunk/high	9.6	11.1	7.9	13.8	15.4	12.2
If sexually active, used STD protection at last intercourse	57.7	57.7	57.7	55.9	61.8	46.6

Note: STD = sexually transmitted disease.

followup? The study therefore used data at 9th grade followup for those having had the 8th grade intervention and data at 10th grade followup for those having had the 9th grade or 8th + 9th grade intervention. Non-intervention comparison groups were drawn from students of the same grade (i.e., either 9th or 10th).

### AOD USE BEHAVIOR

Recognizing the prevalence of alcohol and marijuana use already occurring at baseline, one positive outcome of NAPPASA would be to decrease future high-risk use of AODs present at baseline among subgroups of heavy or regular users. Another positive outcome would be to slow the normal increase in rates of use among the baseline non-users or light users. To address these objectives, subjects were classified as demonstrating either lower or higher risk AOD use at each

assessment period. Abstinence from AODs or minimal alcohol use (drinking only one or two drinks and avoiding intoxication) with no use of other drugs was defined as lower risk AOD use. Higher risk AOD use was defined as use of alcohol to intoxication, a preference for drinking until physical effects are felt by the drinker, and use of any drugs other than alcohol.

NAPPASA intervention participants showed positive intervention effects through a slowing of the normal developmental trend toward increased AOD use. Significantly higher percentages of intervention participants remained in (or moved to) the lower risk AOD use category at both 9th and 10th grade followup periods (figure 2), compared with their respective non-intervention cross-sectional comparison groups (8th grade intervention at 9th grade followup with 9th grade comparison

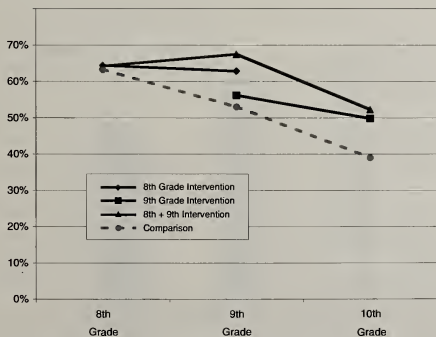


Figure 2. Percent of students demonstrating lower risk AOD use.

group, chi-square = 6.527, 1 *df*,  $p = 0.011$ ; 9th grade intervention at 10th grade followup with 10th grade comparison group, chi-square = 6.652, 1 *df*,  $p = 0.010$ ; 8th + 9th grade intervention at 10th grade followup with 10th grade comparison group, chi-square = 6.222, 1 *df*,  $p = 0.013$ ).

### SEXUAL BEHAVIOR

Positive outcomes of the NAPPASA preventive interventions would be maintenance of virginity and avoidance of high-risk sexual behavior by those persons choosing to be sexually active. Findings from NAPPASA indicate that intervention students did indeed show greater maintenance of virginity and lower rates of some types of risky sexual behavior in non-virgins.

#### Maintenance of Virginity

As seen in figure 3, the normative trend is a decrease in the proportion of

virgins from 8th through 10th grades. Among both the non-intervention comparison schools and the baseline (pre-intervention) data within the intervention schools, the percentage of virgins declines with each grade. Note that at both 8th and 9th grades, the comparison schools show a higher percentage of virgins than the intervention schools at baseline. This initial advantage for the non-intervention schools is consistent with project staff reports that these schools were located in more conservative reservation communities with regard to sexual norms. While this is problematic for assessing project outcomes, an examination of virginity rates in each group does suggest that the NAPPASA interventions facilitated maintenance of virginity.

At 9th grade followup, students who had received the NAPPASA intervention in 8th grade had a higher percentage of virgins than their fellow

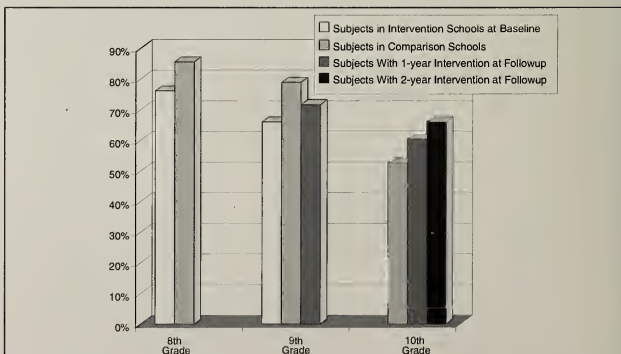


Figure 3. Virgins in intervention and comparison groups.



students (who did not have 8th grade intervention) entering the same high schools (9th grade baseline) (chi-square = 4.10, 1 *df*,  $p = 0.043$ ). At 10th grade followup, those who had received the intervention in 9th grade showed even greater maintenance of virginity than their (more conservative) non-intervention comparison group (chi-square = 4.97, 1 *df*,  $p = 0.026$ ). Even better, students who were in the intervention for both 8th and 9th grades demonstrated an even higher preservation of virginity (chi-square = 6.54, 1 *df*,  $p = 0.011$ ).

### Condom Use

Among non-virgins, there were no significant differences between intervention and comparison groups with regard to the percentage reporting condom use at last intercourse. Rates ranged from 51 to 58 percent among both intervention and comparison groups. The group with the highest condom use was a subgroup of students who received the intervention at 9th grade and who were virgins at baseline but became sexually active by the following year. For these newly non-virgin 9th graders, rate of condom use at last intercourse was 64 percent. Since longitudinal data are not available on comparison subjects, it cannot be determined whether this effect is due to the NAPPASA intervention or is related to later initiation of sexual behavior.

### Sex While Drunk or High

Of particular concern to the NAPPASA research team and communities

was the high prevalence of reported sexual activity among youth while drunk or high. At both 8th and 9th grade baselines, approximately half of the non-virgin students either had engaged in sexual intercourse while drunk or high or did not know whether they had done so because of blackouts. Such behavior is an important risk factor for the transmission of STDs, including HIV/AIDS. As figure 4 shows, the NAPPASA preventive intervention appears to have decreased the incidence of sexual intercourse while drunk or high among the older non-virgins. No significant differences between the 8th grade intervention and comparison groups were observed at the 9th grade followup period. At 10th grade followup, however, 74.4 percent of 9th grade NAPPASA intervention non-virgins stated that they had *not* had sex while drunk or high in the past month, versus 62.8 percent of the comparison group non-virgins (chi-square = 5.66, 1 *df*,  $p = 0.017$ ).

### USE OF PROTECTIVE INFLUENCES TO AVOID RISK BEHAVIOR

One focus of the NAPPASA curriculum was to encourage students to use appropriate social and cultural influences in their environment to assist them in making health-promoting decisions. At each assessment, students reported the extent to which they used seven potential protective influences (parents, friends, self, health class, laws, religion, and ways and teachings of ancestors) to help them avoid (a) drinking and taking drugs and (b) having sexual intercourse. As shown

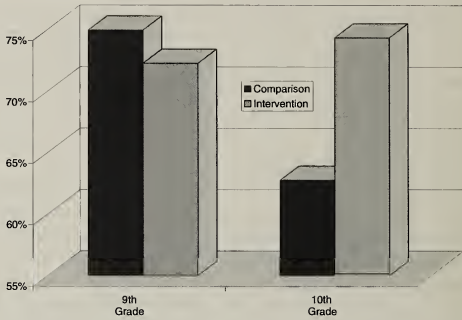


Figure 4. Non-virgins *not* engaging in sex while drunk/high (past month): intervention at 1-year followup vs. comparison.

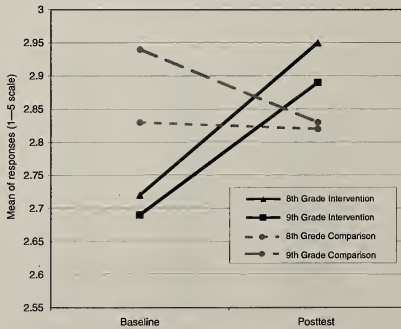


Figure 5. Use of protective influences to avoid sexual intercourse.

in figures 5 and 6, intervention students in the NAPPASA project consistently showed significant increases during the 5-week interval from baseline to posttest in the use of protective influences to avoid health-risking behavior ( $p < 0.001$  for all groups).

## DISCUSSION

### PROJECT EFFECTS ON YOUTH BEHAVIOR

NAPPASA baseline data confirm that many students were already involved in high-risk behaviors before the NAPPASA preventive intervention. Since prevention of high-risk behavior is most effective when initiated before experience with such behaviors (Schaalma et al. 1993; Choi and Coates 1994), these findings indicate both the relevance of expanding the intervention protocol to include an

8th grade curriculum and the difficulties in developing (purely) primary prevention interventions for these youth. In spite of these difficulties, the NAPPASA project appears to have slowed the normal developmental increase in health-risking behavior involving some aspects of AOD use and sexual behavior. Students participating in the NAPPASA curriculum demonstrated lower rates of higher risk AOD use, with these rates being more comparable to non-intervention youth 1 year younger (i.e., at followup, the 9th graders looked more like 8th graders, and the 10th graders looked more like 9th graders).

Development of preventive interventions targeting sexual behavior often raises concern that teaching about sexual behavior and contraception may lead to an increase in sexual activity. However, intervention youth showed greater maintenance of virgin-

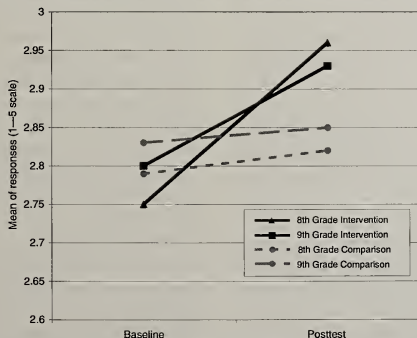


Figure 6. Use of protective influences to avoid drinking and using drugs.

ity, with rates again similar to non-intervention youth 1 year younger. Initiation of first sexual intercourse was delayed for virgins who participated in the NAPPASA intervention. These positive effects occurred for 1 year of intervention during either 8th or 9th grade. The greatest effect was observed at 10th grade for students who completed both the 8th and 9th grade curricula. In post-intervention followup focus groups, teens were asked if the curriculum had tended to encourage their classmates to engage in more sexual behavior. The common response was an exasperated "No, are you kidding! It did just the opposite." Another positive NAPPASA intervention finding was a weakening of the link between sex and alcohol use. Among the older non-virgin youth, NAPPASA participants were less likely to have had sex while drunk or high, a particularly risky behavior for transmission of STDs.

Zimmerman and colleagues (1998) have reported similar findings from their ongoing school-based HIV and substance abuse prevention project. Ninth graders in matched schools in Louisville and greater Cleveland received (1) the Centers for Disease Control and Prevention-endorsed Reducing the Risk (RTR) curriculum, (2) an enhanced RTR, or (3) no extended instruction on the prevention topics. The lowest rate for initiation of first intercourse was for graduates of the enhanced curriculum (15 percent), followed by the standard RTR curriculum and the no-instruction condition (both 20 percent).

Another concern that members of a community may voice is that sexuality

education could undermine traditional and parental values. Our data indicate that this was not the case. NAPPASA participants showed a marked increase from pre- to post-intervention in their use of family, rules, laws, religion, traditional ways, and community protective influences to help them avoid health-risking behaviors. Intervention components were designed to build on existing community values, norms, and influences for health-promoting behavior. Inclusion of such an emphasis may enhance both the acceptability and efficacy of a preventive intervention program targeting sexual or other risk behavior.

#### PROJECT EFFECTS ON LOCAL ENVIRONMENTS

The NAPPASA project lowered some preexisting barriers and effected positive changes in local and regional institutions and communities. Among the barriers confronting successful transfer of the AOD abuse and HIV preventive intervention technology to Arizona rural communities were beliefs that speaking of death may invite it, school policies and parental attitudes against health education involving sex topics, norms against cross-gender discussions of sexual behaviors and their risk for disease, and tendencies to avoid persons with HIV.

Positive changes in local environments were observable as early as the 6th month of the first project year and especially by the third project year. These changes were made through the ongoing collaborative processes involved in developing and sustaining

the school interventions and community educational outreach. The project's community outreach programs were led by a traditional woman from a family with traditional healers. Outreach programs included presentations to health and education service providers, as well as presentations at parent-teacher organization (PTO) or parent-teacher association (PTA) meetings at local schools, other community meetings, health fairs, and service provider conferences.

### **Beliefs Against Speaking of Death**

Initial difficulties with community discussions of AIDS mortality and morbidity were solved via helping to set the agendas and discussions at traditional community meetings or school PTO or PTA meetings and many in-person contacts with elders and other local opinion leaders. The discussions were held in the language of choice of the participants, which in turn led to collaborative efforts to find better ways to describe such concepts as HIV transmission and its effects on the body. Community meetings also produced better understanding about the increased risk for HIV/AIDS infection for persons abusing AODs. They facilitated consensus building about the need for formal educational programs for youth in the schools and for adults in the community. Community consensus reassured local school administrators and school board members that it was not only educationally sound but also politically acceptable to host the school prevention programs.

### **School Environment and Parental Support**

At the beginning of the project, only one of the schools had an educational program concerning sex, and it focused on sexual abuse prevention. During the first months of the project, 2 on-reservation schools changed their policies to host the project's pilot curriculum; within months, 10 more schools and boarding dormitories had changed their policies to host the curriculum and its evaluation measures. Even the non-intervention schools changed policies to permit administration of the NAPPASA questionnaire containing many questions concerning sexual behavior.

Parental support was impressive for the duration of the project. During the project's 4 years, nearly 4,000 students participated with parental consent in one or more aspects of the NAPPASA programs. Participation rates within schools averaged over 90 percent. Even after the termination of the project, several schools continued implementing the curriculum using local resources.

### **Cross-Gender Discussions of Sexual Behavior**

There was another type of project-induced positive change within the schools—that of changing the local norms against cross-gender talk about sex. Prevention-related discussions of health risks from sexual behavior were rare at the start of the project. The project's school curriculum provided the catalyst for such discussions in the school, and community outreach

meetings about the project prompted discussions among adults.

Desired modes of discussion were modeled in the schools and community through the project's intentional use of teams of female and male role models. For example, within the schools, there was always a male and a female co-instructor team who modeled cross-gender talk about curriculum topics. Such open modeling of public forum discussion about sex, STDs, and HIV/AIDS changed student attitudes and behavioral norms. Teachers observed that the prevention curriculum quickly became a "hot" topic among the students. They reported that students had a particular interest in the sex and health topics; there were frequent discussions outside the classroom. In sum, the culture within the schools changed to initiate and sustain cross-gender discussions of the relationships of sexual behavior to AOD use and HIV/AIDS. There were few complaints from parents, teachers, or administrators.

At the community level, the project employed or partnered with women and adult male spokespersons and educators. Mothers and grandmothers were especially useful because they had high status in the project's target communities. These female NAP-PASA spokespersons were very effective, because women are considered the keepers of traditional cultural values in these communities. These women showed how HIV/AIDS prevention was congruent with traditional values and how, potentially, families could be affected. They also

helped link HIV and AOD abuse prevention as being of central importance to the cultural imperative of preserving the family and its health.

### **Moving From Avoidance to Acceptance of Persons Living With HIV/AIDS**

As in any U.S. community at risk from the HIV/AIDS epidemic, NAP-PASA's host communities and surrounding reservations were initially concerned about contact with persons who were HIV infected or living with AIDS. Initially, there was little tolerance for HIV-infected people, because of the lack of sensitivity and education about HIV/AIDS. However, through the project's outreach component, two HIV-infected individuals became involved because they recognized the need to address the issue of social intolerance through education. These individuals were members from the indigenous target communities who helped to facilitate changes in community attitudes toward persons living with HIV/AIDS. The process of changing community attitudes was promoted by way of media technology in the production of educational videos. Other community members contributed as well, providing messages to the indigenous communities centered in the values and traditions of relationships found in the family and community, thereby promoting and supporting cultural values and traditions.

## IMPLICATIONS FOR PREVENTION RESEARCH AND SERVICE

Intensive prevention programs have successfully reduced adolescents' risk behavior by helping them perceive HIV as a relevant problem, motivating them to act safely, assisting in their development of problem-solving and coping skills, and promoting their access to condoms and health care (Stevenson et al. 1995). However, avenues for the technology transfer and broad-scale dissemination of such prevention programs must be identified.

Findings from NAPPASA support the effectiveness of prevention programs that are theory based; culturally relevant; early, persistent, and prolonged; and comprehensive, addressing co-occurring risk behaviors and skills training. In addition, the NAPPASA data support the notion that AIDS prevention programs must be tailored to consider sociocultural issues relevant to the target population, including stereotypical sex roles, local preferences and barriers in communication, and youths' developing sexual behavior and AOD use. Prevention literature reviews support the contention that, in order to be effective, prevention programs must be multifaceted in scope and address relevant behavioral, cognitive, and socio-cultural variables (Dryfoos 1990; Kelly et al. 1993; Choi and Coates 1994; Winett and Anderson 1994).

Creating a context where the principles of social learning theory can be applied is a central aspect of an effective intervention (Rotheram-Borus et al. 1995). As theory-driven research

involving culture- and subgroup-specific HIV/AIDS education, NAPPASA was designed based on social cognitive theory and social action theory adapted to American Indian contexts and culture. Through the SODAS decision-making model, instructors and students modeled new behaviors, initiated desired behavioral changes that cumulatively reflected changes in complex behavioral patterns, provided opportunities to practice new social behaviors, and created frequent opportunities for rewarding participants.

Small-group activities nested within prevention programs are an ideal environment for adolescents to share their common problems, brainstorm solutions, and receive peer and adult support for responding safely. These small-group activities were the most-liked aspects of the NAPPASA curriculum, because there was the opportunity to model new behaviors and to demonstrate coping and problem-solving skills. Students' experiences were elicited and used as the basis for role play situations where additional observational learning took place. These role play exercises in NAPPASA were rated by students as both the most difficult and the most useful aspects of the curriculum.

## CONCLUSION

Comprehensive and sustained HIV/AOD prevention research projects are uncommon in rural America, including rural American Indian communities. The multidisciplinary and

multicultural nature of NAPPASA successfully transferred state-of-the-science prevention technology so that it produced both positive environmental changes and many desired attitudinal and behavioral changes among participating youth.

The data presented in this chapter point to the success of the project, as does the developmental course of the project itself. Two 24-session curricula designed to be taught in sequence were developed instead of the original single 14-session curriculum. The project also developed two dozen locally produced videos instead of two as originally planned. Fourteen schools and boarding dormitories participated instead of the expected seven. Many more than the anticipated number of teachers and community spokespersons were also trained. Despite the challenges posed by such a large-scale prevention project, a great deal of effort was put into involving the local communities to create and improve intervention materials and assessment instruments. These are just some of the dynamic processes that make up the fabric of prevention.

Why was there such an acceptance of the overall project, including materials and the research process? The answer could be simply that the communities were ready and recognized the need for the prevention technology and for a multidisciplinary and integrated curriculum. The 24-session curricula addressed multiple issues facing American Indian communities (e.g., unplanned pregnancy and AOD abuse) from the perspective of the American Indian experience. It is

hoped that field staff from the targeted communities, schools, and community-based organizations, as well as others across the United States, will continue to use, update, and enhance the NAPPASA curricula materials in an effort to sustain the prevention vision.

This project has been the springboard from which tribes have launched new programs, such as HIV/AIDS education programs and HIV/AIDS awareness campaigns. National efforts have begun to focus on the "invisible" American Indian communities and needs. However, more work is needed. HIV infection, risk behaviors, and AIDS case management are still very sensitive issues in American Indian communities. The fervent efforts of the early 1990s have "plateaued." There is a need to readdress HIV/AIDS prevention and examine how we might reach a new generation of young people who are caught up in the chronic problems of Indian country while facing the many challenges of today's youth.

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to be developed, implemented, and evaluated successfully.

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## Chapter 13

# Fetal Alcohol Syndrome Among American Indians: Epidemiology, Issues, and Research Review

Philip A. May, Ph.D., Joanne McCloskey, Ph.D.,  
and J. Phillip Gossage, Ph.D.

*KEY WORDS: Native American; fetal alcohol syndrome; cultural patterns of drinking; biological AOD (alcohol or other drug) use disorder theory; prevalence; AODR (AOD related) mortality; case history; prevention research; treatment outcome*

### BACKGROUND

Before addressing the specific nature of fetal alcohol syndrome (FAS) among American Indians, some background information on the syndrome and its history is necessary. Fetal alcohol syndrome has been found to occur in all human racial and ethnic groups (Abel 1995); the problem

occurs wherever people have access to and consume amounts of alcohol that are beyond their individual thresholds for producing children with FAS. Therefore, even though this chapter deals with its occurrence among American Indians, no implication is made that it is exclusively a problem among the various Indian tribes. We also do not want to imply that these

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tribes are homogeneous groups; in fact, there is tremendous variation within and among Indians as aggregated by geography, political jurisdiction, and social and cultural conditions. This variation includes FAS rates: Some groups of Indians have no FAS children, others have low rates of FAS, and still others have high rates.

The term "fetal alcohol syndrome" was first used in 1973, when Kenneth L. Jones, David W. Smith, and colleagues described all of the major characteristics of malformations and disabilities in offspring of chronic alcoholic mothers (Jones and Smith 1973; Jones et al. 1973). It was the actual identification and description of the syndromal patterns and the outcomes of heavy drinking during pregnancy that first made FAS a topic of medical and social concern. Prior to this, indications that alcohol was teratogenic (caused birth defects) either had not been fully recognized or were ignored by most individuals, scientists, and societies. However, some substantial evidence that alcohol was teratogenic had been documented by several authors. For example, in 1899 Sullivan, a physician working in the prisons of London, reported a number of cases of heavy-drinking women who bore children with some of the features of FAS (including mental retardation and convulsing) and clearly described the mechanism of damage as prenatal exposure to alcohol. Sullivan noted that alcoholic women suffered tremendously high rates of miscarriage and fetal and childhood death, which were characterized as progressively more common in each succeeding

pregnancy. Lemoine and colleagues (1968) described abnormal features in the offspring of alcoholics in France in a review of 127 children. They described many of the features that were later carefully cataloged and highlighted by Jones and Smith (1973).

The symptoms of FAS children are recognized as falling into three major categories: (1) facial anomalies and other dysmorphology, (2) poor growth indicators, and (3) a pattern of developmental and intellectual problems (Aase 1994). A committee of the Institute of Medicine (IOM) described the following specific criteria for the diagnosis of FAS (IOM 1996):

- Evidence of a characteristic pattern of facial anomalies that includes features such as short palpebral fissures and anomalies in the premaxillary zone (e.g., flat upper lip, flattened philtrum, and flat midface).
- Evidence of growth retardation, as in at least one of the following: low birth weight for gestational age, decelerating weight over time not due to nutrition, and disproportional low weight to height.
- Evidence of central nervous system neural developmental abnormalities, as in at least one of the following: decreased cranial size at birth, structural brain anomalies (e.g., microcephaly) and neurological hard or soft signs such as impaired fine motor skills, neuro-sensory hearing loss, poor tandem gait, or poor eye-hand coordination.

According to the IOM report, a FAS diagnosis can be made with or

without confirmed maternal exposure if key indicators within each of the above categories are present. In addition, the committee described "partial FAS" with confirmed alcohol exposure and also described two categories of less extensive alcohol-related effects: "alcohol-related birth defects" (ARBD), which are the physical defects that can occur in the face or body, and "alcohol-related neurodevelopmental disorders" (ARND), which are evidence of central nervous system problems manifested by either structural brain abnormalities or neurodevelopmental and behavioral problems (IOM 1996, pp. 76-77). Children with the symptoms of partial FAS, ARBD, or ARND do not have the full syndrome of FAS, but their problems are linked to prenatal alcohol exposure.

The prenatal alcohol damage done to children varies tremendously with the *quantity* of alcohol consumed, the *frequency* with which it is consumed, and the *timing* of the consumption as it relates to the gestational age of the fetus (May 1995). Commonly referred to as QFT, the amount that the woman drinks, the frequency and regularity with which she drinks, and the timing in terms of the day, week, month, and trimester of fetal development influence both level and type of damage inflicted on the fetus. For example, heavy and frequent doses of alcohol in the first trimester affect the facial and structural features of the fetus, the risk of spontaneous abortion is heightened during the second trimester, and growth measures (weight and length) are heavily affected in the third trimester (Little

and Wendt 1991; Russell 1991). Heavy drinking at any time during the 9 months of pregnancy can cause neurodevelopmental damage, which may result in mental retardation and other intellectual and behavioral problems (Rosett and Weiner 1984; Pierce and West 1986a; West and Goodlett 1990; Aase 1994). High blood alcohol concentrations (BACs) are very influential in causing many of the symptoms of FAS, making peak BAC and heavy binge drinking prime risk factors (Pierce and West 1986b).

### HISTORY OF FAS RESEARCH AND PROGRAMS AMONG AMERICAN INDIANS

The first research on FAS among American Indians was planned and initiated in 1979 by an interdisciplinary committee of concerned Indian Health Service (IHS) officials and selected university consultants. A pilot project was designed to determine the prevalence of FAS in selected southwestern tribes and its epidemiologic characteristics and to identify possible measures of prevention and intervention (May and Hymbaugh 1982/83). This project, which operated until 1983, had three goals: (1) train local IHS and tribal officials in the recognition of FAS, (2) screen referred children who were suspected of having features of FAS, and (3) establish the epidemiology for the planning of prevention programs.

Once the epidemiology was established in seven reservation sites across the Southwest (May et al. 1983), a

prevention program was designed, initially for southwestern tribes. This prevention effort was later expanded and adapted to other tribal cultures to become the National Indian Fetal Alcohol Syndrome Prevention Program, which operated from 1983 through 1985. This program did not maintain the research focus of the pilot program. Instead, it trained tribal and research staff in all IHS service areas to become health educators and trainers on FAS recognition and prevention (May and Hymbaugh 1989).

After funding ended for the National Indian Fetal Alcohol Syndrome Prevention Program in the fall of 1985, IHS efforts were neither centralized nor extensive again until 1990. Then in 1990 a new FAS prevention program was instituted within the IHS (Hamilton 1995). It existed until funding cuts forced its closure in 1994. The major thrust of this program was primary prevention through education and training, but it also encouraged the development of interventions (secondary and tertiary prevention) in local communities.

What has been described here thus far documents only the official history of IHS and government efforts. In the last 25 years, however, many local, tribal, and regional prevention efforts have been undertaken among Indians in various communities. As early as the late 1970s, there were programs in major off-reservation areas such as Seattle's Indian Center, Denver's Indian Center, and the California Urban Indian Health Programs in the San Francisco area. In the early and mid-1980s, FAS prevention projects sprang up on a number of reservations

from special maternal and child health initiatives or within tribal school or alcoholism treatment programs. Generally these programs were started and implemented by one or several highly motivated and dedicated individuals.

The growth and popularity of FAS prevention programs indicated a strong local interest and concern among individuals and also among many Indian groups. Such local interest has been documented in a number of articles (May and Hymbaugh 1989; Hamilton 1995; Shostak and Brown 1995). The fact that FAS is a threat to tribal survival and overall community functioning seems to have been a primary motivator for prevention and other public health initiatives. Furthermore, the problem of adult alcohol abuse, which is difficult to approach by other means, receives much more attention once concern about FAS is present in a community.

One other key motivating event in FAS concern and prevention activity among American Indians was the publication of Michael Dorris' *The Broken Cord* (1989). This book presented a tragic yet very readable documentation of the heartbreak of FAS for parents, school personnel, health care providers, and others.

## THE EPIDEMIOLOGY OF DRINKING AMONG INDIAN WOMEN

### DRINKING PREVALENCE AND PATTERNS

Although the stereotypes about drinking and American Indians lead us to



believe that a majority of Indians drink, adult prevalence studies have shown that in a number of tribal communities the proportion of Indian women who drink is less than the proportion of all women in the total U.S. population. From some of the earliest works of Levy and Kunitz (1974), Whittaker (1982), and others (e.g., May and Smith 1988), it has been consistently shown in many tribes that the proportion of Indian women who abstain is greater than the proportion of abstainers in the total U.S. population. In fact, some studies and anecdotal evidence have documented that most American Indians today have rather conservative norms about drinking (May and Smith 1988; Kunitz and Levy 1994). Among many tribes, most Indian women do not condone heavy or moderate drinking and generally show a high rate of abstention from alcohol, particularly in the adult years of 30 and beyond. Moreover, throughout the different age groups, Indian women have higher rates of abstention than do Indian males.

Table 1 presents a summary of all published studies on the adult prevalence of drinking among American Indians. These studies include many details about drinking among Indian females in the selected communities.

A prominent pattern that characterizes Indian drinking on many reservations is a high rate of abstention. Reported rates of current users in Indian tribes are often lower than those rates for men and women in the U.S. general population (Levy and Kunitz 1974; May and Smith 1988;

Welty and Janis 1988; Leung et al. 1993; National Institute on Alcohol Abuse and Alcoholism [NIAAA] 1994; Welty et al. 1995). Furthermore, when compared with Indian men, fewer Indian women drink and thus suffer fewer harmful consequences (Leung et al. 1993).

However, among those Indian women who do drink, high rates of heavy drinking are frequently reported (Whittaker 1982). Heavy-drinking Indian women, like heavy-drinking Indian men, often concentrate drinking in binges (Quaid et al. 1993; Welty et al. 1995) that are associated with risky behavior such as driving while intoxicated. Binge drinking often occurs on weekends in the context of group gatherings, when large amounts of alcohol are consumed (Longclaws et al. 1980).

Finally, most Indian women who do drink tend to do so during their childbearing years, with alcohol use becoming less common when they reach midlife (Whittaker 1962; Levy and Kunitz 1974; Longclaws et al. 1980; May and Del Vecchio 1993; Kunitz and Levy 1994). For example, in a survey conducted in a unique Navajo wage work community (the only one on the reservation with a single industry providing employment) (May and Del Vecchio 1993) the highest percentage of female drinking was found in the 16-25 (54 percent) and 26-34 (55 percent) age groups. The highest mean number of drinks per episode (three drinks) was for women ages 16-25 years, and the average number of times that they reported being drunk in the last year

**Table 1.** Adult Prevalence of Alcohol Use and Misuse Among Women in the U.S.

Sample (Source)	% of Current Drinkers Per Year in Population (unless otherwise stated)		
	Total	Male	Female
<i>U.S. general population</i> (NIAAA 1994)			
1983: ages 18+	61	72	50
1988: ages 18+	57	68	47
<i>Standing Rock Sioux</i>			
1960: ages 15+ (Whittaker 1962)	70	82	55
(1980: ages 12+ Whittaker 1982)	58	71	50
<i>Cheyenne River Sioux</i>			
1988: ages 18+ (Welty and Janis 1988)	45.9	NA	NA
<i>Navajo</i>			
1969: ages 18+ (Levy and Kunitz 1974)	30	52	13

## General Population and Various Indian Tribes.

Indicators of Heavy  
Use Among Women

9% of women were considered heavy drinkers.

Heavy drinking among women was reported to have dropped 2% from 1983 to 7% in 1988.

- Of the females, 55% drank compared with 20% of their mothers.
- Compared with their mothers' generation, five times as many women in this sample were regular drinkers.
- 16% of women described themselves as alcoholics.
- Of those who did not drink, 18% of women described themselves as recovered alcoholics.

- 14% of all drinkers were classified as heavy users by Mulford's Quantity-Frequency Index.
- 45% of females said they had experienced trouble from their own or spouse's drinking.

Other Items of  
Interest for Women

- There was some increase in % drinking in the previous 10-20 years, particularly among women.
- Black and Hispanic women had higher rates of abstinence.

Women's drinking patterns: 36% drank occasionally (fewer than 3x/week), 19% drank regularly (at least 3x/week), 45% abstained. Drinking incidence was higher among males and females of the younger generation.

Women's drinking patterns: 32% drank occasionally (-4% from 1960), 17% drank regularly (-2% from 1960), 50% abstained (+5% from 1960); 22% of drinkers reported that they became intoxicated the last time they drank; 40% of drinkers reported that drinking had caused them problems.

56% of women were lifelong abstainers; 32% of women totally stopped drinking; 60% of women were abstainers in last year.

*Continued*

Table 1. *Continued*

Sample (Source)	% of Current Drinkers Per Year in Population (unless otherwise stated)		
	Total	Male	Female
<i>Navajo</i> (continued)			
1984: ages 16+ (May and Smith 1988)	52	64	40
1993: ages 16+ (May and Del Vecchio 1993)	55	73	40
<i>Ute</i>			
(Jessor et al. 1968) 1966: no age specified	80	NA	NA
<i>Ojibwa</i>			
(Longclaws et al. 1980) 1978: ages 18+	84	NA	NA
<i>Northwest Coast Village</i>			
(Leung et al. 1993) 1969: ages 20+	39	52	26
1988: ages 20+	18.8	32.8	6.2

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**Indicators of Heavy  
Use Among Women**

3% of females and 25% of males reported that they had had a problem with alcohol; 62% of females reported alcohol problems within family.

- In a sample of 102 women, 2% were very heavy drinkers.
- Average times drunk in past year was 4 for females ages 16-25 and 27 for all ages 26-34.
- 53 to 55% of women ages 16-25 and 26-34 used alcohol in past month.
- Average number of drinks per episode was 3 for females ages 16-25 and 1 for ages 26-34.

**Other Items of  
Interest for Women**

Females had more conservative opinions about drinking than males. 98% of females, vs. 88% of males, felt Indians have a problem with alcohol abuse.

- 21% of females and 44% of males used alcohol in past month.
- Average number of days drinking was 1 per month for females ages 16-34.
- 98% and 100% of females ages <25 and 26-34, respectively, knew about fetal alcohol syndrome.

- Indians ingested nearly 7x as much alcohol as the Anglos and 3x as much as the Spanish.
- Indians had about 6x as many problems associated with their drinking.

- AOD use was less common among adults over 35.
- Recreation and social functions encouraged drinking among women and men.

Lifetime prevalence of alcohol dependence was 31% for women and 72.9% for men. Lifetime prevalence of alcohol abuse was 8.4% for women and 3.6% for men. 82% of women and 52% of men were in remission from alcohol dependence.

Women started drinking later than men and had a shorter duration and lower rates of severe drinking.

*Continued*

Table 1. *Continued*

Sample (Source)	% of Current Drinkers Per Year in Population (unless otherwise stated)		
	Total	Male	Female
<i>Lumbee</i>			
(Beltrame and McQueen 1979)			
1978 urban			
(Baltimore, MD):			
ages 21-64, mean age 39.2	72.6	NA	NA
1978 rural			
(Pembroke, NC):			
ages 21-64, mean age 36.3	45.7	NA	NA
<i>Cheyenne River, Devils Lake, and Oglala Sioux</i> (Welty et al. 1995) 1989-92: ages 45-74, mean age 56			
	47.4	60.0	37.7
<i>Central Arizona Pima, Maricopa, Papago</i> (Welty et al. 1995) 1989-92: ages 45-74, mean age 55			
	40.3	57.4	30.5

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**Indicators of Heavy  
Use Among Women**

- Heavy drinkers were concentrated in low status occupations.
- Heavy drinkers had both low work satisfaction and low status satisfaction.
  
- Low status occupation, low satisfaction with work, and low commitment to work were associated with heavy drinkers.
- Age was the only major determinant of variance in QFV of drinking (16%); other variables only explained 7% of variance.

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**Other Items of  
Interest for Women**

- 47.9% felt Indians have more problems with alcohol than non-Indians.
- 69% related alcoholism to other health problems.
- Church attendance explained 8% of the QFV variance
  
- Higher job status, satisfaction, and commitment were associated with abstinence.
- 84.8% felt that Indians have more problems with alcohol than non-Indians.

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Of current drinkers, 43% of women and 62% of men binged in last month; 9% of women and 24% of men drank 14 or more drinks in last week; mean number of binges per year was 10.8 for women and 29.5 for men.

- 62% of women were abstainers.
- Mean number of drinks per week for current drinkers was 5 for women and 10 for men.
- In overall sample 25% of women and 50% of men binged in past year.

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Of current drinkers, 60% of women and 77% of men binged in last month; 9% of women and 19% of men drank 14 or more drinks in last week; mean number of binges per year was 22 for women and 44 for men.

- 70% of women were abstainers.
- Mean number of drinks per week for current drinkers was 6 for women and 9 for men.
- In overall sample 24% of women and 51% of men binged in past year.

*Continued*

Table 1. *Continued*

Sample (Source)	% of Current Drinkers Per Year in Population (unless otherwise stated)		
	Total	Male	Female
<i>Southwestern Oklahoma, Apache, Caddo, Delaware, Comanche, Kiowa, and Wichita</i> (Welty et al. 1995) 1989-92: ages 45-74, mean age 58	36.8	49.0	27.9

Note: In the Indicators of Heavy Use and the Other Items of Interest columns, the information is presented as reported by the original studies. Because the measures are not entirely consistent from one study to the next, and because age ranges and other criteria vary, caution is urged when making comparisons from this table. Each row should be read across columns as a discrete, single source of information, and readers should focus on theoretical similarities rather than exact statistical comparisons. NIAAA = National Institute on Alcohol Abuse and Alcoholism; AOD = alcohol and other drug; NA = information not available; QFV = quantity, frequency, and variability.

was highest for women ages 26-34 years (the average was 27 times for this age group). Two women out of 102 (2 percent) were found to be very heavy drinkers.

#### ALCOHOL-INVOLVED MORTALITY

In table 2, data on female and male alcohol-involved mortality are presented as a possible measure of the level of pathological drinking. Motor vehicle and other accidents, suicide, and homicide take a heavy and disproportionate toll on Indian women compared with the U.S. average, although the total of such deaths is lower among Indian women than among Indian men. This death toll

may be explained by the high rate of binge drinking, with associated risky behaviors performed after drinking, among Indian women.

Studies of BACs of males and females in mortality studies in New Mexico show that some Indians drink very heavily. For example, data from New Mexico for 1982-91 (Guerin 1991) revealed that the mean BAC for all Indian women who died in vehicular crashes was 0.188, more than twice the level of legal intoxication (0.08). This was the highest BAC in any racial or gender group except for Indian males. For those Indian women who died while driving a vehicle, the mean BAC was 0.192; for



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**Indicators of Heavy  
Use Among Women**

Of current drinkers, 1% of women and 2.5% of men binged last month; 4% of women and 14% of men drank 14 or more drinks in last week; mean number of binges in past year was 7 for women and 25 for men.

**Other Items of  
Interest for Women**

- 72% of women were abstainers.
- Mean number of drinks per week for current drinkers was 4 for women and 8 for men.
- In overall sample 14% of women and 33% of men binged in past year.

those who were passengers, the mean BAC was 0.159. Furthermore, except for Indian males, Indian women pedestrians had the highest mean BAC (0.208) of pedestrians killed of any ethnic or gender group. While some of the women in these studies were barely under the influence of alcohol, others were severely intoxicated, with an upper range BAC of 0.577, almost six times the legal limit in effect during those years (Guerin 1991).

In addition to motor vehicle and pedestrian accidents, another alcohol-involved cause of death for Indian women is suicide. In New Mexico studies, more than 60 percent of Indian females who committed sui-

cide between 1980 and 1991 exceeded legal intoxication levels for driving a motor vehicle (May and Van Winkle unpublished data).

The specific causes of death listed under "alcoholism" in table 2 give reason for further concern. The rates of death from alcohol dependence syndrome, alcoholic liver disease, alcoholic psychoses, and other chronic consumption causes for Indian women are much higher than those for women in the general population. Depending on the age category examined, the rates for Indian women are 4.6 to 14 times higher than for women in the general population.

Cirrhosis of the liver death rates (included in the alcoholism category

Table 2. Estimated Alcohol-Involved Causes of Death for U.S. Indians (1987-89) and the Indian to General Population Deaths, and Total Numbers.

Cause of Death	15-24			25-34			35-44			45-54		
	Ind.	U.S.	Ratio	Ind.	U.S.	Ratio	Ind.	U.S.	Ratio	Ind.	U.S.	Ratio
<i>Female</i>												
MV acc.	44.1	20.1	2.2	40.3	11.6	3.5	30.2	9.3	3.2	27.9	9.5	2.9
Other acc.	11.2	3.2	3.5	12.0	5.0	2.4	17.1	5.7	3.0	15.7	6.6	2.4
Suicide	11.5	4.2	2.7	6.8	5.7	1.2	7.7	6.9	1.1	2.9	7.9	0.4
Homicide	11.9	6.0	2.0	10.6	7.3	1.5	11.7	4.6	2.5	5.0	3.1	1.6
Alcoholism	3.1	0.1	31.0	21.2	1.6	13.3	39.7	4.7	8.4	68.0	8.7	7.8
<i>Male</i>												
MV acc.	134.2	56.6	2.4	117.9	36.2	3.3	85.8	25.8	3.3	64.8	22.5	2.9
Other acc.	58.8	18.6	3.2	74.7	23.8	3.1	71.8	25.2	2.8	69.5	24.5	2.8
Suicide	64.0	21.9	2.9	61.1	25.0	2.4	26.5	22.9	1.2	22.6	21.7	1.0
Homicide	34.3	24.7	1.4	44.7	24.7	1.8	37.1	17.3	2.1	20.3	11.4	1.8
Alcoholism	6.5	0.5	13.0	34.3	3.9	8.8	84.9	15.6	5.4	125.7	28.4	4.4

Note: U.S. Indian (Ind.) population includes all Indians and Alaska Natives (population = 1,207,236) in all parts of the 35 reservation States served by the Indian Health Service (IHS) or IHS contract providers. MV acc. = motor vehicle accidents; Other acc. = other accidents. Alcoholism deaths include the following ICD-9 death code groups: E291—alcoholic psychoses; E303—alcohol dependence syndrome; E571.0-571.3—alcoholic liver disease; E305.0—alcohol overdose; E425.5—alcoholic cardiomyopathy; E535.3—alcoholic gastritis; E790.3—elevated blood-alcohol level; and E860.0, 860.1—accidental poisoning by alcohol, not elsewhere classified.  
Source: Computed from IHS 1993.

of table 2) are especially high among Indian women compared with the rates among non-Indian women, and they have been for quite some time (although the rates are lower among Indian women than among Indian men). A study by Johnson (1978), which was dis-

tributed through administrative channels in Indian public health circles but otherwise never published, highlighted a very high rate of cirrhosis deaths among American Indian women. For the year 1975 Indian women accounted for 45 percent of all Indian cirrhosis deaths, and

U.S. General Population (1988) by Age and Sex: Rates per 100,000, Ratio of

									Total Number		
55-64			65-74			Total Deaths (All Ages)	x	Estimated % Alcohol Involved	=	Total Alcohol Involved	
Ind.	U.S.	Ratio	Ind.	U.S.	Ratio						
19.2	10.5	1.8	22.4	14.1	1.6	461		65		300	
25.2	10.2	2.5	40.2	21.3	1.9	296		25		74	
6.1	7.2	0.8	3.0	6.8	0.4	101		75		76	
5.0	2.5	2.0	6.0	2.9	2.1	115		80		92	
11.7	11.2	1.0	38.8	8.4	4.6	317		100		317	
Total						1,290				859	
% of all Indian deaths (N = 18,336)						7.0				4.7	
% of all female Indian deaths (N = 7,560)						17.1				11.4	
74.5	21.5	3.5	69.5	25.5	2.7	1,212		65		788	
116.5	29.7	3.9	148.4	43.1	3.4	1,007		25		252	
12.8	25.0	0.5	11.3	33.0	0.3	463		75		347	
14.0	8.2	1.7	18.8	5.9	3.2	383		80		306	
126.9	37.9	3.3	123.9	33.4	3.7	689		100		689	
Total						3,574				2,382	
% of all Indian deaths (N = 18,336)						20.5				13.0	
% of all male Indian deaths (N = 10,776)						34.8				22.1	

Johnson found that the Indian women were dying from cirrhosis, not only at high rates but also at a very young age. This study found the rate of cirrhosis deaths for Indian females to be 6 times that for white females and 3.4 times that for black females.

In spite of the fact that fewer Indian women drink than men, 32 percent of all American Indian "alcoholism" deaths in 1987-89 were women (calculated from table 2). Taken together with the information on death rates presented thus far, there

is clearly a reason for concern about heavy drinking among some Indian women. Yet the literature on drinking patterns and drinking problems among Indian women is virtually nonexistent. Despite the alarming findings presented here, few if any studies have been published highlighting the toll of alcoholism and alcohol abuse mortality among Indian females; this is one of the most understudied and underreported problems in the Indian health literature.

In recent years, there have been a number of ethnographies and literary documentations of the life histories of females involved in heavy alcohol abuse. Two books, *Crazywater* (Maracle 1993), and *Wounded Warriors* (Arbogast 1995), have provided life histories of severe and pathological drinking among some Indian women. But detailed epidemiologic and statistical treatments of drinking among Indian women do not exist in the published literature.

When we combine the evidence from various sources, we are led to the following conclusions. First, a smaller proportion of Indian women drink than does the general population of the United States. Second, among those who do drink, there are both binge drinking patterns and chronic drinking patterns among a significant subset of Indian women in many communities, which lead to very high levels of mortality. Third, as is the pattern with Indian males, many Indian women quit drinking in their mature years (mid-30s or sooner).

## BIOLOGY OF ALCOHOL PROCESSING

Differential biology has been suggested by some people as an explanation for problematic drinking patterns among Indian drinkers in general, and among Indian women in particular. In the only study published specifically on Indian women and alcohol elimination, Farris and Jones (1978) found that Oklahoma Indian females metabolized alcohol significantly more rapidly than non-Indians and that the peak BAC level was similar for both groups. Also, evidence from studies of Indian females of other tribes and cultures indicate that Indian alcohol metabolism is not deficient, but is actually faster than other groups. For example, Segal and Duffy (1992) found that Aleut Indian and Eskimo females all eliminated alcohol more rapidly than Caucasians. Bennion and Li (1976) had seven Indian females in their study and found no difference in alcohol metabolism rates among Indians and non-Indians. The findings of similar studies among a variety of Native groups in the United States are very consistent (May 1996a).

Liver isoenzyme studies have shown little or no evidence that there is an alcohol dehydrogenase (ADH) or an aldehyde dehydrogenase (ALDH) deficiency for either Indian men or Indian women (Goedde et al. 1985, 1986; Dyck 1993). Furthermore, liver biopsy studies among New Mexico Indians, 17 of whom were female, found no evidence of atypical (deficient) ADH or ALDH liver isoenzyme patterns (Rex et al. 1985).

Therefore, the genetically determined liver characteristics of American Indians from a number of tribes appear to be very similar to Caucasians.

There has been no consistent set of findings from alcohol metabolism or liver isoenzyme studies to promote a conclusion that female Indian drinking behavior is disproportionately affected by genetics or biophysiology (Bosron et al. 1988). In fact, the opposite has consistently been found. Indian female drinking behavior is affected by individual drinking behavior within common sociocultural settings, just as female drinking is within most other human groups (Reed 1985).

## FAS EPIDEMIOLOGY

A number of the initial cases of FAS in humans ever diagnosed in the world were American Indian (from Seattle, Washington), and some of the first articles that appeared on the clinical diagnosis of FAS had a substantial number of Indians in the samples (Ulleland 1972; Jones and Smith 1973; Jones et al. 1973; Smith et al. 1981). For example, in the clinical sample of FAS children described by Smith et al. (1981) in British Columbia, 69 of 76 subjects were American Indian. In another study from the Yukon and British Columbia, 59 of 62 mothers bearing FAS children were Native (Asante and Nelms-Matzke 1985; Asante 1986). Aase (1981) also identified certain Indian groups as high risk.

Therefore, Indians became linked with FAS from the time the syndrome was first reported, and from the earli-

est studies an assumption was made that FAS was disproportionately high among American Indians. This assumption was a logical extension of the "drunken Indian" stereotype (May 1994), which is still quite pervasive in the United States. In fact, the authors of this chapter have heard some clinicians in recent years say that they did not expect to see FAS children in their practice because "they were not serving any American Indians."

The epidemiology of FAS is more solidly established for American Indians than for any other ethnic population in the world. Most of the knowledge of FAS prevalence and epidemiology among non-Indians has been predicated on clinic-based studies with little or no outreach or on surveillance studies, which record information at birth. The passive systems, which provide little or no outreach, have been criticized as being incomplete and characterized by varying but substantial degrees of underreporting (IOM 1996; May 1996*b*).

## PREVALENCE OF FAS IN THE GENERAL POPULATION OF THE UNITED STATES

In three discrete summaries of prevalence data for the United States and the world, Abel and Sokol produced three different estimates for North America and the European nations. The lowest estimate was produced in 1991 from a review using only prospective studies. Using a meta-analysis of only the studies that followed FAS in babies from the prenatal period through birth and the first few years of life, their estimate was that FAS occurred at a rate of

0.33 per 1,000 births (Abel and Sokol 1991). In a more recent assessment, again of only prospective studies, Abel (1995) concluded that FAS occurs at a higher rate than the previous estimate, 0.97 per 1,000, and is even higher among low socioeconomic status (SES) groups at 2.29. However, every study included in both of these estimates was clinic based and generally used rather passive measures of case finding and ascertainment. Furthermore, no Indian-specific studies were included in these estimates.

When Abel and Sokol (1987) included retrospective studies in their analysis, they came up with a much higher estimate. Examining both prospective and retrospective studies (including one Indian-specific study), they concluded that the FAS rate was approximately 1.9 per 1,000 in the Western world and 2.2 per 1,000 in North America (Abel and Sokol 1987). This latter estimate is likely to be more comparable to the Indian prevalence studies, since Indian studies are virtually all retrospective and use active case ascertainment over time where the suspect cases are followed through their early developmental years.

#### PREVALENCE OF FAS AMONG AMERICAN INDIANS

Table 3 summarizes the prevalence of FAS and some of the epidemiologic characteristics that have been found in the major, published Indian studies. The table includes nine studies often cited in the literature, with samples drawn from Canada, Alaska, the Pacific Northwest, the Northern Plains, and the southwestern United States. Six of

these studies used active case ascertainment methodologies. The 1996 IOM report concluded that, because FAS is a complex diagnosis which requires following children through the first 3–8 years of life, population/community-based studies using active case ascertainment may yield the greatest number of cases and most accurate data.

Population sizes in the studies listed in table 3 ranged from 116 children in an Indian village in Canada (Robinson et al. 1987) to 4,275,909 births all over the United States (Chavez et al. 1988). Most of the Indian prevalence studies attempted complete surveys of all children in particular communities and in targeted age groups who had even some of the symptoms of fetal alcohol exposure. Therefore, the most comparable rate would be Abel and Sokol's 1987 estimate (2.2 per 1,000 population).

The results of the studies in table 3 revealed a broad range of FAS prevalence rates, from a modest 1.0 to a rather remarkable 120.0 per 1,000 live births. For discussion purposes we will leave out the study that found this exceptionally high rate, because it is a worst case scenario from an isolated, small community with a concentration of heavy drinkers and only 116 children under 19 years of age (Robinson et al. 1987). In the Centers for Disease Control and Prevention (CDC) Birth Defects Monitoring Program study by Chavez and his colleagues (1988), the FAS rates for non-Indian ethnic groups were substantially lower than for Indians, and the authors of that article stated that the data suggest

substantial underreporting for births to non-Indian mothers. Therefore, given its passive methodology and the authors' own statement of selectivity of FAS diagnoses, this study is best eliminated as well. Finally, since three studies are from Alaska in overlapping time periods, only the one with the most active and detailed case ascertainment methodology (Egeland et al. 1995) is used to estimate an overall rate for American Indians.

Using the low estimates from the five studies that most completely assessed particular tribal populations (which, as reported in the articles, have produced seven discrete rates for distinct time periods, mostly in the 1980s), the average rate of FAS among American Indians is 7.86 per 1,000. Using the high estimates from the most complete studies, the average rate is 8.97 per 1,000 children. Both of these rates are more than three times the estimates of Abel and Sokol (1987) for North America; and they are 3.4 and 3.9 times higher than Abel's (1995) estimates of FAS among African Americans (2.29). Again, however, Abel's estimates come primarily from prospective studies, and the Indian data are almost totally from retrospective studies, which are much more likely to detect FAS if the children are followed for multiple years, especially through ages 3-8.

Two Canadian publications were not included in table 3 or the above calculations. The first, by Habbeck and colleagues (1996) provided data for Saskatchewan on the unchanged incidence (0.52 per 1,000) of FAS over a 20-year period. In spite of the

fact that 86 percent of these cases were Canadian Native Indians, the authors were unable to calculate separate Native rates because their data included cases of Canadian Indians who were both Registered and non-Registered. Only "Registered" Indians in Canada are afforded special status as "Natives" and are categorized separately in their government population data. Therefore, accurate birth figures for non-status Indians were not available and accurate prevalence rates could not be calculated. Habbeck and colleagues, however, reported that an estimated 15 to 20 percent of the provincial births in Saskatchewan were Aboriginal; therefore, Indians had a higher rate of diagnosed FAS—86 percent—since they accounted for a far higher percentage of the FAS cases.

In the other Canadian publication, Square (1997) presented summary medical record data from a First Nations (as American Indian tribes are now called in Canada) reserve school population in Manitoba. No detail was provided on the size or characteristics of the reserve population of the community, but from 11 FAS and 6 fetal alcohol effects (FAE) cases, a rate of "roughly 100 cases of FAS/FAE [per 1,000 births] on the reserve" was reported. The author and the medical team involved in this study classified this rate as an "epidemic" (Square 1997). They also reported in this article that the non-Indian population in northern Manitoba may have a rate higher than North American averages, but "we whites don't like to discuss

**Table 3.** Prevalence and Characteristics of Fetal Alcohol Syndrome (FAS), Alcohol-Related Selected Epidemiologic Studies Among American Indians.

Study	Sample	Type of Case Finding (Population Eligible for Screening)
May et al. 1983	New Mexico, AZ and CO Navajo culture average (2 reservations and 7 tribal sites) Pueblo culture average (3 reservation sites) SW Plains culture average (2 reservation sites) Total culture-adjusted rate of children 0-14 years 0-4 years 5-14 years	Active outreach in IHS system ( <i>N</i> = 22,963)
Asante and Nelms- Matzke 1985	British Columbia (BC)  Yukon	Active outreach in centralized system ( <i>N</i> = 5,065)
Robinson et al. 1987	One village of British Columbia plateau culture Indians	Active system: screened all children <19 years in a village ( <i>N</i> = 116)
Chavez et al. 1988	United States 1981-86 Blacks Hispanics American Indians Asians Whites	Passive system: voluntary hospital reporting to CDC's Birth Defects Monitoring Program ( <i>N</i> = 4,275,909)
Bergeson et al. 1993	Alaska 1978-82 1983-87 1988-91	Passive system: birth and death certificates, Medicaid claims, IHS and pediatric practice records
Duimstra et al. 1993	North and South Dakota Lakota on three different reservations	Active outreach based on low birth weight (<3,000 g) and developmental delay ( <i>N</i> = 1,022)



## Birth Defects (ARBD), and Alcohol-Related Neurodevelopmental Disorders (ARND) in

Rate per 1,000			Other Findings
FAS	FAE (ARBD/ARND)	Total	
1.6	0.9	2.5	<ul style="list-style-type: none"> <li>• Mothers of FAS/FAE children had a mean age higher than mothers of non-FAS/FAE children.</li> <li>• 65 mothers produced 85 FAS/FAE children; average of 1.3 children per mother.</li> <li>• 23% of birth mothers were deceased, all from alcohol-involved trauma and illness such as cirrhosis of the liver.</li> <li>• 73% of children with FAS/FAE were adopted or in foster placement.</li> <li>• Ratio of FAS to FAE varied by tribe.</li> </ul>
2.2	0.5	2.7	
10.7	8.8	19.5	
2.0	1.1	3.1	
4.2	1.5	5.7	
1.0	0.8	1.8	
10.0 <sup>a</sup>	15.0 <sup>a</sup>	25.0	66% of children seen in special clinics in Yukon for learning disorders and 51% in Northwest BC were offspring of alcohol-involved pregnancies.
24.0 <sup>a</sup>	22.0 <sup>a</sup>	46.0	
120.0	69.0	189.0	<ul style="list-style-type: none"> <li>• 1.6 FAS or FAE children per mother.</li> <li>• 41% of pregnancies not alcohol involved.</li> </ul>
0.6	NA		<ul style="list-style-type: none"> <li>• Study points to efficacy of searching multiple data sources.</li> <li>• Lower rate for 1988-91 may be result of incomplete ascertainment, rather than temporary decline in rate of FAS among Alaska Natives (see Egeland et al. 1995).</li> </ul>
0.08	NA		
2.99	NA		
0.03	NA		
0.09	NA		
2.0	NA		<ul style="list-style-type: none"> <li>• Study points to efficacy of searching multiple data sources.</li> <li>• Lower rate for 1988-91 may be result of incomplete ascertainment, rather than temporary decline in rate of FAS among Alaska Natives (see Egeland et al. 1995).</li> </ul>
2.9	NA		
1.4	NA		
3.9-8.5	NA		The lower rate was confirmed by a dysmorphologist on cases seen. The higher rate is an estimate based on the positive case assessment rate of those children screened projected to those not available for assessment.

*Continued*

Table 3. *Continued*

Study	Sample	Type of Case Finding (Population Eligible for Screening)
Jones and Nakamura 1993	Alaska 1978-91 Alaska Natives	Passive system: birth and death certificates, Medicaid claims, one IHS case file, one pediatric practice case file
Quaid et al. 1993	Warm Springs, OR	Active outreach and screening from medical charts; all children under age 5 years eligible ( <i>N</i> = 429)
Egeland et al. 1995	Alaska (Native only rate) 1982-85 1986-89	Passive system: capture-recapture, multiple-source system of children ages 3-6 years/ 7-10 years

Note: CDC = Centers for Disease Control and Prevention; IHS = Indian Health Service; NA = data not available.

\* Estimated from the ratio of FAS to FAE in the total Indian and non-Indian data of the two provinces; non-Indians were less than 10% of the entire cases identified.

our problems with alcohol and tend to sweep them under the rug."

Given that there is no discussion of the methodology or assessment tools used in the Square study, this article is not included in the average estimates in table 3. If the rate of FAS is this high (e.g., 60 per 1,000) on this isolated reserve, then it should be treated as an isolated case similar to that studied by Robinson and colleagues (1987) in

British Columbia until proven otherwise. There is a tendency in FAS prevalence studies to undertake screening where the problem is the worst; therefore, very high rates in isolated communities should not be treated as reflective of broader populations.

A final consideration for this section is how many cases of ARBD and ARND might exist in Indian country. Sampson and colleagues (1997) estimated that

Rate per 1,000			
FAS	F AE (ARBD/ARND)	Total	Other Findings
2.1-6.6	NA		Rates for non-Natives were described as inaccurate due to lack of reporting and passive interest in case ascertainment. (See also Egeland et al. 1995.)
9.2	9.2	18.4	<ul style="list-style-type: none"> <li>• Adult prevalence of drinking severity for tribal population matched with findings of FAS screening.</li> <li>• All FAS children living away from natural family.</li> <li>• 3 of 4 FAE placed out of home.</li> <li>• FAS children younger than FAE children.</li> <li>• 1.14 damaged children per mother.</li> </ul>
3.8/3.1 2.0/3.1	NA		Independent active case seeking through a special IHS screening initiative produced higher ascertainment and a higher rate within the capture-recapture system time period.

there are 9.1 cases of ARND (including FAS) per 1,000 births in the Washington State population. This means that there may be up to 6 or 7 cases of ARND for every FAS child (1.3 per 1,000 in their studies). If this is true for American Indians overall, there are many affected children in a number of Indian communities, a range of 54-63 per 1,000 ARND cases if the average rate of 8.97 is accurate. Since ARND and

ARBD are generally found in the same child, an assessment of ARBD in isolation from ARND might not add greatly to this estimate (e. g., +25 percent).

### MATERNAL RISK FACTOR EPIDEMIOLOGY

The studies cited in table 4 highlight the maternal risk factors for FAS and ARBD/ARND among Indian and

non-Indian women. Included are five studies carried out in Indian communities, one study in North Dakota that included both Indian and non-Indian mothers of FAS and FAE children, and five studies of non-Indian populations of interest to this chapter. Maternal risk factors include a heavy-drinking family of origin, higher age and parity of mothers, a tendency for a mother to have repeated FAS and ARBD/ARND births, foster and adoptive placement of children and higher maternal mortality, less prenatal care, other negative perinatal characteristics associated with both the mother and infant, heavy drinking by the mother and her spouse/partner, smoking by the mother, and low SES.

#### **AGE, PARITY, AND REPEATED FAS AND ARBD/ARND BIRTHS**

Higher maternal age has been cited as increasing the risk of a drinking mother having a child affected by FAS and ARBD/ARND. That is, as a mother ages, each year brings an increased risk of having a child with FAS or more severe alcohol-related effects in general. Among southwestern Indians (Pueblo, Navajo, and Southwestern Plains) on seven reservations, 82 percent of all mothers of FAS children were 25 or older at the birth of their FAS or FAE children (May et al. 1983). The average age of mothers with FAS/FAE children was 29.7, while for mothers of children seen in clinics who were not diagnosed with FAS or FAE the average age was 26.9 (May et al. 1983). In Warm Springs, Oregon (a reservation of four plateau culture tribes), the mean age of Indian mothers of FAS/FAE children

was 32 years, while the mean age of mothers of children with no diagnosis was 22 years (Quaid et al. 1993). In a North Dakota study of both Indian (73.5 percent) and non-Indian (26.5 percent) women, Burd and colleagues (1996) reported that mothers of FAS and FAE children had a mean age of 27.3 when the affected child was born; control mothers had a mean age of 24.8 years when they gave birth. An association between higher maternal age and FAS/FAE is also suggested by the finding of a survey of the general U.S. population that women who continued to drink during the third trimester of pregnancy were older than those who quit drinking earlier in pregnancy (Day et al. 1993).

Related to the higher mean age of mothers who give birth to children with FAS and ARBD/ARND is the higher parity of mothers with affected children. Although studies of Indian women who had children with FAS and ARBD/ARND did not report the actual differences in the number of children born to mothers, two studies of non-Indian women reported parity rates. In a study that compared African American, Hispanic, and white alcoholic women with non-alcoholic African American and Hispanic women, the average parity of the alcoholic women was 3.0 children and the average parity of the nonalcoholic controls was 2.3 children (Bingol et al. 1987). In a study of eight non-Indian mothers who gave birth to 10 children with FAS, the mean parity was 5.8 children (Pierog et al. 1979).

Mothers who give birth to one child affected by FAS or ARBD/ARND are

more likely to give birth to additional affected children. On seven southwestern Indian reservations, mothers who bore one FAS child gave birth to an average of 1.3 affected children (May et al. 1983). In a Canadian Indian band in British Columbia, 14 women had 22 children with FAS and FAE; 5 of the women accounted for 12 (54 percent) of the affected children, yielding a rate of 1.6 alcohol-damaged children per mother (Robinson et al. 1987). In Warm Springs, Oregon, the rate was 1.14 affected children per mother (Quaid et al. 1993).

High gravidity (number of pregnancies) is also common among mothers who have children with FAS. Although few recent studies have mentioned this as an issue (Pierog et al. 1979; May 1991; May et al. 2000), it has been frequently seen clinically. In the historical literature Sullivan (1899) graphically and meticulously described a pattern of the progressively poor outcomes of successive pregnancies among chronic inebriates; their later pregnancies increasingly resulted in spontaneous abortion, stillbirth, and sudden infant death ("overlying" in archaic English). Therefore, continued heavy chronic consumption of alcohol among women results in high gravidity but fewer viable children in addition to the increased risk for the surviving children to have FAS, ARBD, and ARND.

The rate of women who give birth to FAS and other affected children can be calculated per 1,000 women of childbearing age. May and colleagues (1983) found that the rate of mothers of FAS and FAE children per 1,000 of

childbearing age (15–44 years of age) was 4.6 for the Pueblo, 5.3 for the Navajo, and 30.5 for the Southwestern Plains (see table 4). In the only other Indian study that presents similar data, the rate of FAS and FAE mothers in the highly alcoholic British Columbia community studied by Robinson and colleagues (1987) was extremely high, 311 per 1,000. The rate of FAS (not including FAE) births among low SES women in the United States is estimated to be 2.29 per 1,000 and 0.26 among middle- to upper-class women. Thus, the Indian rates in the southwestern United States study (May et al. 1983) are two or more times higher than Abel's estimates for low SES women (Abel 1995).

#### FOSTER/ADOPTIVE PLACEMENT AND MATERNAL MORTALITY

Children with FAS and ARBD/ARND frequently do not live with their birth mothers, but instead live with foster or adoptive families. Of the children affected by FAS and FAE on seven reservations in the Southwest, 73 percent were in foster or adoptive placement by the time the child was diagnosed (May et al. 1983). There is some evidence that the same pattern exists for non-Indians. A study of 10 non-Indian children with FAS found that 4 were placed in homes other than that of their birth mother or in institutions and an additional 3 were abused, neglected, or both (Pierog et al. 1979).

Mothers of FAS and ARBD/ARND children also have higher mortality rates than do mothers of other children (Streissguth et al. 1985). Among southwestern Indians, 23.1

**Table 4.** Maternal Risk Factors in Studies of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol

Study	Sample	Type of Study
<i>Indian</i> May et al. 1983	Southwestern Indians (7 reservations)	Community-based epidemiology
May 1991	Southwestern Indians	Community-based epidemiology
Quaid et al. 1993	Warm Springs, OR	Community-based epidemiology

percent of the mothers were dead at the time their children were diagnosed with FAS or the lesser effects of prenatal alcohol exposure (May et al. 1983). In the North Dakota study that combined a group of Indian and non-Indian women, maternal death rates were 4.5 percent for FAS children and 4.1 percent for FAE children (Burd et al. 1996). However, in Warm Springs, Oregon, all Indian mothers of FAS and FAE children

were still living by the time of diagnosis of the child (Quaid et al. 1993). Therefore, elevated mortality is a common, although not universal, threat to mothers of FAS children.

#### **PRENATAL CARE AND PERINATAL CHARACTERISTICS OF THE MOTHER AND INFANT**

Women who give birth to FAS and ARBD/ARND children have generally received less prenatal care than

## Effects (FAE) Among American Indians and Selected Other Populations.

Host (Individual) Factors	Environmental and Agent Factors
<ul style="list-style-type: none"> <li>• Average age of FAS/FAE mothers: 29.7.</li> <li>• Mothers of affected children were older than mothers of children not affected and than population as a whole.</li> <li>• 22% had multiple FAS/FAE children.</li> <li>• Average of 1.3 affected children per mother.</li> <li>• Maternal drinking was greater and FAS was greater in 1978–82 than in 1969–77.</li> </ul>	<ul style="list-style-type: none"> <li>• 73% of children with FAS/FAE in foster/adoptive placement.</li> <li>• Maternal FAS/FAE production rate averaged 6.1 per 1,000 women of childbearing age.</li> <li>• Maternal production rates (per 1,000) by tribe: Pueblo, 4.6; Navajo, 5.3; Plains, 30.5.</li> </ul>
<ul style="list-style-type: none"> <li>• Sporadic binge drinking of females was greatest in SW Plains tribes.</li> <li>• Chronic drinking was greater in Pueblo tribes.</li> <li>• All tribes tended to binge drink more than general population.</li> </ul>	<p>Ratio of FAE to FAS by tribe varied because of norms, drinking style, and ostracism: Plains, 1:4; Navajo, 1:2; Pueblo, 1:1.</p>
<ul style="list-style-type: none"> <li>• Among females, 58% drank and 31% drank monthly.</li> <li>• Of current drinkers, 50% had consumed 5 or more drinks per occasion, 42% had ever had a DUI, 39% had been in detox, 60% had experienced blackouts, and 85% had experienced hangovers.</li> <li>• Mean age was 32 years for FAS mothers, 32 years for FAE mothers, and 22 years for mothers of children with no diagnosis.</li> <li>• All FAS/FAE mothers were still living.</li> </ul>	<p>In the community overall, 16.2% were unemployed, 20.7% of families were below the poverty line, and 50% of adults age 25 or older had graduated</p>

*Continued*

other mothers (Day et al. 1993). Although the studies of Indian women exclusively did not include levels of prenatal care, the North Dakota study that included Indian and non-Indian women found that 44 percent of the mothers of children with FAS or FAE had more than five prenatal visits, compared with 73 percent of the control mothers (Burd et al. 1996). In another study of non-Indian mothers of FAS children, five

of the eight mothers had no prenatal care during their pregnancies, one had erratic prenatal care, and two made prenatal visits late in their third trimester (Pierog et al. 1979).

Perinatal characteristics of mothers at risk for FAS and ARBD/ARND are less weight gain during pregnancy, lower birth weight, and a slightly shorter gestational age. Indian and non-Indian North Dakota mothers of affected children gained a mean of 8.8

Table 4. *Continued.*

Study	Sample	Type of Study
Asante and Nelms-Matzke 1985	Yukon (14 communities) and Northwest British Columbia (NW BC) (22 communities)	Community-based epidemiology
Robinson et al. 1987	Canadian Indian band, Canim Lake, British Columbia	Community-based epidemiology
<i>Indian and Non-Indian</i> Burd et al. 1996	ND children	FAS registry and birth certificate data 50 Indian cases 18 non-Indian cases

kg during pregnancy; mothers of non-affected children gained 13.9 kg during pregnancy. Directly related to the mothers' weight gain during pregnancy was the contrast in birth

weights of these two groups of North Dakota infants. Infants with FAS or FAE had a mean birth weight of 2,880 g; infants of mothers in the control group had a mean birth



Host (Individual) Factors	Environmental and Agent Factors
<ul style="list-style-type: none"> <li>• 74% of Yukon Native women used alcohol during pregnancy (two or more drinks per month).</li> <li>• 71% of NW BC Native women used alcohol during pregnancy.</li> <li>• Binge or intermittent heavy drinking was more frequent among Native women than non-Native women.</li> </ul>	<p>Prevalence rate of FAS/FAE was 46 per 1,000 Native children and 0.4 per 1,000 non-Native children in the Yukon and 25 per 1,000 Native children and 0.4 per 1,000 non-Native children in NW BC.</p>
<p>14 women had 22 children with FAS/FAE; 5 of these women accounted for 12 (54%) of the affected children.</p>	<ul style="list-style-type: none"> <li>• Prevalence rate of FAS/FAE of 190/1,000 children.</li> <li>• Of the 22 children, 14 had FAS and 8 had FAE.</li> <li>• 64% of FAS and FAE children were mentally retarded.</li> <li>• Maternal production rate = 311 per 1,000 women of childbearing age.</li> </ul>
<ul style="list-style-type: none"> <li>• Characteristics of mothers of FAS/FAE children: mean age at time of birth of affected children was 25.1 for whites and 28.1 for Indians; mean weight gain (kg) during pregnancy was 12.5 for whites and 8.1 for Indians; gestation (weeks) was 39.0 for whites and 38.1 for Indians.</li> <li>• Indian women had higher rates of smoking during pregnancy and fewer prenatal visits than non-Indian women.</li> <li>• In general, mothers of FAS/FAE children were older, were more likely to be unmarried, gained less weight during pregnancy, started prenatal care later in pregnancy, had fewer prenatal visits, and were more likely to smoke during pregnancy.</li> <li>• Maternal death rates: 4.5% for FAS children, 4.1% for FAE children, 4.4% for combined FAS/FAE.</li> </ul>	<p>Children with FAS/FAE (44 with FAS, 24 with FAE) had lower birth weights (g)—2,926 for whites and 2,864 for Indians—and higher rates of sibling deaths.</p>

*Continued*

weight of 3,467 g. Also, the mean gestational age of North Dakota infants with FAS or FAE was several days shorter than that of those without FAS or FAE (Burd et al. 1996).

#### **DRINKING PATTERNS OF AT-RISK WOMEN AND THEIR SPOUSES/PARTNERS**

Patterns of heavy drinking differ for Indian and non-Indian women, with

Table 4. *Continued*

Study	Sample	Type of Study
<i>Non-Indian</i> Serdula et al. 1991	Data on pregnant women from 21 States	Behavioral Risk Factor Surveillance System, 1985-88
Day et al. 1993	U.S. population	Review of epidemiology surveys
Bingol et al. 1987	NY and CT	Case-control study of a clinical population of alcoholic women grouped according to SES and nondrinking controls

Host (Individual Factors)	Environmental and Agent Factors
<ul style="list-style-type: none"> <li>• Overall, the prevalence of alcohol consumption among pregnant women declined from 32% in 1985 to 20% in 1988, but for women who drank during pregnancy the median number of drinks per month did not change.</li> <li>• No decline occurred among those with less education or under the age of 25.</li> <li>• In 1988 the prevalence of alcohol use among pregnant women remained highest among smokers (37%) and the unmarried (28%).</li> </ul>	<p>Pregnant women were less than half as likely as nonpregnant women to have consumed any alcoholic beverages in the previous month, about one-fifth as likely to have been binge drinkers, and about one-fourth as likely to have been heavier drinkers. Alcohol consumption ranged from 40 to 60% of that of nonpregnant women.</p>
<ul style="list-style-type: none"> <li>• Women who continued to drink through the third trimester of pregnancy were more likely to be older, to be black, to use more illicit drugs, to have lower levels of education, and to have lower social status.</li> <li>• Women who drank heavily were more likely to be young, white, and single, to have a higher education and income, and to be employed outside the home.</li> </ul>	<p>The highest rates of use for alcohol, marijuana, and cocaine were found among women of childbearing age.</p>
<ul style="list-style-type: none"> <li>• Both groups of alcoholic women drank an average of 6 oz of alcohol a day (12 drinks), and the onset of alcoholism was during their teen years.</li> <li>• Characteristics of upper-middle-class alcoholic women: mean age was 40.8, mean parity was 3.3, 66% were college graduates, 61% were married, ate a balanced diet, 80% used prescription drugs freely, 8% had liver cirrhosis, preferred vodka.</li> <li>• Characteristics of lower SES alcoholic women: mean age was 29.6, mean parity was 2.6, no college graduates, 25% were married, ate mostly carbohydrates, 10% used prescription drugs freely, 18% had liver cirrhosis, preferred beer.</li> </ul>	<ul style="list-style-type: none"> <li>• Upper-middle-class alcoholic women had a FAS rate of 0.9% and a FAE rate of 3.7%; 36% had at least one alcoholic parent; 30% of spouses were alcoholic.</li> <li>• Lower SES alcoholic women had a FAS rate of 40.5% and a FAE rate of 30.5%; 100% had at least one alcoholic parent; 50% of spouses were alcoholic.</li> <li>• Among controls, 10% had at least one alcoholic parent, and 3% of spouses were alcoholic.</li> </ul>

*Continued*

Table 4. *Continued*

Study	Sample	Type of Study
Pierog et al. 1979	NY and NJ hospitals	Clinical studies of 8 mothers and their 10 FAS children
Abel 1995	Worldwide	Review of studies examining incidence of FAS per 1,000 births

Note: DUI = driving under the influence; MAST = Michigan Alcoholism Screening Test; SES = socioeconomic status.

a pattern of binge drinking or intermittent heavy drinking more predominant among Indian women (May 1996a). This pattern of heavy, sporadic drinking among women was found to be greater in Southwestern Plains tribes, although chronic drinking was greater among Pueblo tribes (May 1991). On the Warm Springs Reservation, tribal women identified binge drinking as the most common female drinking pattern. Among the 58 percent of the women on this reservation who drank, 50 percent reported that they had consumed five or more drinks when they drank (Quaid et al. 1993). In a sample of women in a wage work community on the Navajo reservation, the 54 per-

cent of drinking women ages 16–25 reported being drunk 4 times per year, but women 26–34 reported an average of 27 times (May and Del Vecchio 1993). Getting “plastered” on weekends may be a common high-risk pattern for a certain subset of women (Kunitz and Levy 2000). Among the Sioux in 1980, 22 percent of women indicated they were intoxicated the last time that they drank (Whittaker 1982). Drinking patterns that produce a high BAC seem to predominate among Indian women who do drink, even among the minority who continue to drink into the later ages (Welty et al. 1995).

The patterns of heavy drinking during pregnancy that put women at risk

Host (Individual Factors)	Environmental and Agent Factors
<ul style="list-style-type: none"> <li>• Mean parity: 5.8.</li> <li>• 5 mothers had 13 abortions—1 was spontaneous and the rest were induced.</li> <li>• Most mothers had a history of heavy daily drinking during pregnancy.</li> <li>• 5 mothers had no prenatal care, 1 had erratic prenatal visits, and 2 had visits late in the third trimester.</li> </ul>	<p>In the followup of the FAS children, 1 was lost to followup, 2 were abandoned, 2 were placed in an institution or foster care, and 3 were found to be abused, neglected, or both.</p>
<ul style="list-style-type: none"> <li>• 4.3% rate of FAS among heavy-drinking women (defined as average 2 or more drinks per day, or 5–6 per occasion, or positive MAST, or clinical diagnosis)</li> <li>• Estimated FAS incidence per 1,000 in the U.S. was 0.26 for Caucasians, 2.29 for African Americans, and unknown for Native Americans.</li> <li>• Number of women per 1,000 ages 15–44 giving birth to FAS children in the U.S. in 1992 was 2.29 for low SES and 0.26 for middle-high SES.</li> </ul>	<p>Low SES and heavy alcohol consumption were both associated with smoking, poor nutrition, poor health, increased stress, and use of other drugs.</p>

for having a child with FAS or ARBD/ARND likewise differ for Indian and non-Indian women. Binge drinking or intermittent periods of heavy drinking were more common among pregnant Indian women than among non-Indian women (Asante and Nelms-Matzke 1985). In contrast to Indian women, pregnant non-Indian women were found to drink more frequently, often daily (Pierog et al. 1979).

The spouses and partners of alcoholic women are more likely to be alcoholic than those of non-alcoholic women (Wilsnack et al. 1991). At least one Indian study among the Navajo found that FAS mothers and other heavy-drinking women frequently mentioned heavy-drinking spouses and

families of origin (Masis and May 1991). In a study of non-Indian women who were at risk for FAS and ARBD/ARND, it was reported that 30 percent of the spouses of upper-middle-class alcoholic women were also alcoholic; among lower SES black and Hispanic women, 50 percent of their spouses were alcoholic. Among the nonalcoholic control subjects, 3 percent of their spouses were alcoholic (Bingol et al. 1987).

In summary, binge drinking among those women who do drink puts American Indian women at risk for ARBD of all kinds. And like women of other ethnic groups, Indian women who drink heavily are more likely to have heavy-drinking male partners.

## SMOKING PATTERNS

Smoking during pregnancy is frequently associated with drinking during pregnancy. Data on U.S. women from 21 States in 1988 found that the prevalence of alcohol use among pregnant women was high among smokers (Serdula et al. 1991). Plains Indian women in North Dakota had higher rates of smoking during pregnancy than did non-Indian women (Burd et al. 1996). However, smoking prevalence was generally low among women in the tribes of the southwestern United States (May and Del Vecchio 1993) and specifically among FAS mothers (May et al. 1983). Thus, cultural and regional variations are issues in considering smoking as a related risk behavior for FAS.

## SOCIOECONOMIC STATUS

Maternal SES is related to the risk of giving birth to a child with FAS or ARBD/ARND. Low SES status and its concomitant conditions (e.g., poverty, lack of education, and hopelessness) create a social context that increases the likelihood that alcohol will affect the fetus (Abel 1995). In the Indian community of Warm Springs, Oregon, where FAS and FAE children were identified, 20.7 percent of families fell below the poverty line and 16.2 percent were unemployed (Quaid et al. 1993). In the Southwest, FAS mothers from all three tribes studied were described as low SES (May 1991), but differences in rates of FAS, ARBD, and ARND may vary more from culturally prescribed drinking patterns than from SES (May et al. 1983).

Non-Indian women also provide evidence that low SES is a maternal risk factor for FAS and ARBD/ARND. In a study that divided alcoholic women into two groups based on SES, it was found that 4.6 percent of upper-middle-class alcoholic women had a child with FAS or FAE, compared with 71 percent of lower SES women (Bingol et al. 1987). Abel's (1995) rate of FAS births among women (of child-bearing age) in the United States was 8.8 times higher among women of low SES than among middle and high SES women.

## EDUCATION FOR PREVENTING FAS

Efforts to educate women about the relationship between drinking during pregnancy and FAS, ARBD, and ARND have had a documented impact on some women. A study of pregnant women in 21 States reported that the number of U.S. women who drank during pregnancy declined from 32 percent in 1985 to 20 percent in 1988 (Serdula et al. 1991). However, among women who did drink during pregnancy, the mean number of drinks per month did not decrease. Thus, while education efforts to prevent FAS, ARBD and ARND have led to a reduction in prenatal drinking, further efforts must target the women whose drinking continues during pregnancy.

## CASE HISTORIES

Case histories of two Indian women from the larger tribes of the southwestern United States provide particularly poignant examples of the natural/unnat-

ural course of alcoholism and FAS. In each vignette pseudonyms are used.

#### APRIL

April was 36 years old at the time these data were collected. She is a member of a tribe characterized by low social integration (May 1996a), that is, one that allows members substantial individuation of behavior. April grew up in a family that had substantial alcohol involvement. Her first experience with alcohol was when she was 16, and she began drinking regularly at age 20. Twice she has sought treatment for her drinking, once via a self-help group, the other time in an outpatient setting. Her life has seen considerable turmoil, with more than 10 incidents of domestic violence; she has been arrested four times for intoxication. She is currently drinking heavily and is experiencing medical complications with her liver. During her sixth pregnancy April was unemployed; she was working part time during her seventh.

April has been pregnant nine times and has given birth to eight children, the youngest of which died in infancy. The three youngest living children have been examined by a dysmorphologist.

No details are available about April's drinking habits during her pregnancy with her sixth child, a girl, born in 1986. Although an examination of this child revealed some minor structural abnormalities of hands and feet as well as small palpebral fissures and a narrow palate with dental malalignment, this child does not have FAS.

Before her pregnancy with her seventh child, a boy born in 1990, April

consumed at least 10 drinks three to four times a week; on some days she drank more. During this pregnancy, she reports having cut down to 1 drink every day, but with considerably heavier drinking on some days. She was 3 months pregnant before her pregnancy was confirmed. April said she drank less alcohol during her second and third trimesters. She did not live with the child's father during this pregnancy. An examination of this child revealed marked growth deficiencies and structural, cognitive, and behavioral abnormalities. This child has FAS.

Before her pregnancy with her eighth child, a boy, born in the early 1990s, April was consuming about 6 drinks every day, and drank more on some days. She was 2 months pregnant before her pregnancy was confirmed. During this pregnancy she said she cut down to about 4 drinks almost every day, but drank more on some days. She maintained this pattern throughout this pregnancy. April lived with the father of her child during this pregnancy; he was hardly supportive of abstinence, since he drank 10 or more drinks almost every day throughout April's pregnancy. An examination of this child revealed structural, cognitive, and behavioral abnormalities. This child was her second child with FAS.

April gave birth again in 1994, this time to a girl who died in infancy of dehydration (etiology unknown). At the time this history was collected, April was using Depo-Provera (medroxyprogesterone acetate) as her birth control method but did not comply with getting regular injections, and

she was considered by research staff to still be at high risk for producing a future FAS or otherwise affected child.

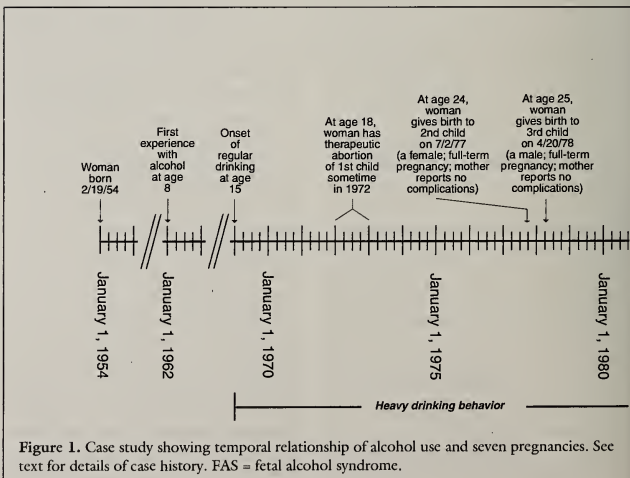
### BEVERLY

Beverly was 41 years old at the time these data were collected. She is a member of a large tribe characterized by medium social integration (May 1996a), which means that drinkers are frequently left to their own devices and not often confronted about their problem drinking. Beverly's parents tended to drink with some moderation, but her partner and closest male and female friends were heavy drinkers. Her first experience with alcohol was when she was 8, and she began drinking regularly at age 15. On four different occasions she has sought treatment

for her drinking, in self-help and inpatient and outpatient settings. Her life has seen considerable turmoil, with incidents of domestic violence; she has been arrested eight times for intoxication, driving under the influence of alcohol, and child neglect. She currently is abstinent and has experienced medical complications with her liver. Beverly was unemployed during the three pregnancies described here.

Beverly has been pregnant seven times and has given birth to six children, five of whom are still living. Three of the youngest four children have been examined by a dysmorphologist to document whether they have FAS or related symptoms.

Before her pregnancy with her fourth child, a boy, born in 1986



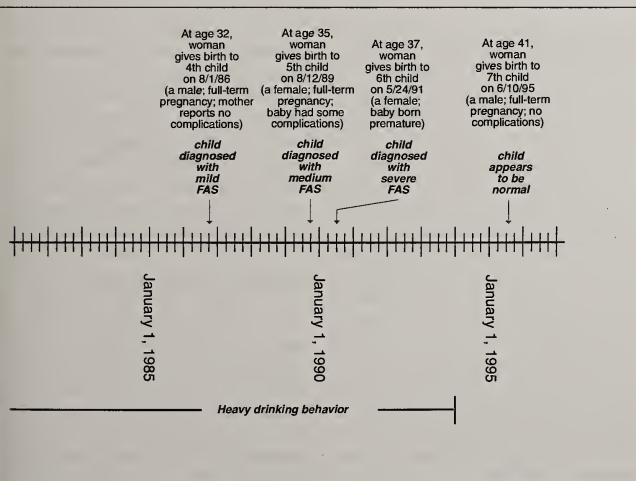


when Beverly was 32, she consumed 10 or more drinks three to four times a week. During this pregnancy, she continued to drink the same amounts. Her husband also drank 10 or more drinks three to four times weekly throughout Beverly's pregnancy. She was 4 months pregnant before her pregnancy was confirmed. An examination of this child revealed growth deficiencies and structural abnormalities. Although tested and found to have a normal IQ, this child was reported to have school failure and behavioral problems. This child has a diagnosis of "mild" FAS.

Before her pregnancy with her fifth child, a girl, born in 1989 when Beverly was 35, she was consuming large amounts of alcohol. During this preg-

nancy she continued to drink 10 or more drinks three to four times a week. She was 5 months pregnant before her pregnancy was confirmed. Her husband also drank 10 or more drinks almost every day throughout Beverly's pregnancy. An examination of this child revealed growth deficits and structural, cognitive, and behavioral abnormalities. This child has FAS and is more severely affected than the previous child.

Before her pregnancy with her sixth child, a girl, born in 1991 when Beverly was 37, she continued to consume large amounts of alcohol. During most of this pregnancy she drank 10 or more drinks three to four times a week. This time she waited longer to confirm her pregnancy, 6 months. She reported that she drank less in her



second trimester but more in her third. Again, her husband also drank 10 or more drinks almost every day throughout Beverly's pregnancy. An examination of the child revealed growth deficits and structural, cognitive, and behavioral abnormalities. This child has FAS and is the most severely affected FAS child of the three children born to Beverly.

By the fall of 1994 a wonderful change occurred in this family. Even though none of her three affected children had been diagnosed with FAS at that point, Beverly and her husband knew that three of their children were not normal and presumed alcohol was the cause. They questioned the nature of their lifestyle, recognized the social and health problems in their lives, began to change their lives, and became very involved in the Native American Church (which discourages alcohol use). They both discontinued drinking. Shortly thereafter, she became pregnant with their seventh child. That child, a boy, was born in 1995. An examination of the child revealed no apparent abnormalities.

Beverly's history shows the classic, progressively serious effects of the continued heavy use of alcohol; we have diagramed that history in figure 1. But her history also shows that once drinking during pregnancy ceases, the birth of a normal child is again possible.

At the time this history was collected, Beverly was not using a method of birth control and was considered by research staff to be at medium risk for producing a future affected child. As long as she main-

tains the changes in lifestyle, her awareness of the consequences of alcohol abuse, and her adherence to Native American Church doctrine, it is quite likely that no future alcohol-related anomalies will be produced.

#### SUMMARY OF THE CASE STUDIES

From these two case studies and figure 1, common patterns of drinking, child-birth, and lifestyle are illustrated. One can clearly see that maternal drinking over an extended period of time usually precedes the birth of a FAS child. Frequently, mothers of FAS children drink for many years and have several relatively "unaffected" children prior to the birth of the first FAS child. Once an ARBD, ARND, or FAS child is born, subsequent births are virtually certain to be equally or more affected if the mother continues with a similar drinking pattern and lifestyle. A problem-drinking male partner is frequently part of the social setting and will encourage continuation of heavy drinking in the female. Finally, the man and the woman in the second case study both turned away from drinking with a major shift in lifestyle fueled by new spiritual interests and religious practices. This sets the stage for the next section on prevention.

#### PREVENTION RESEARCH

There are few outcome studies of FAS prevention in the general scientific literature (Weiner et al. 1989; Little et al. 1990), and few, if any, of these studies used adequate control groups to measure success. All have been judged by Schorling (1993) to have a number of other methodological problems or flaws.

**TRAINING TRAINERS,  
BOTTLE LABELS,  
HEALTH CARE PROVIDERS,  
AND POPULAR MEDIA**

Studies of Indian knowledge of FAS and education to prevent FAS have been undertaken in a variety of sites. May and Hymbaugh (1989) reported that the National Indian Fetal Alcohol Syndrome Prevention Program was able to impart knowledge to 2,000 trainers, who in turn conducted their own community training events with numerous local populations. The results indicated that not only was substantial knowledge gained when local citizens or "grass-roots" people were trained by local indigenous trainers, but the knowledge was retained in adolescents and adults over time periods up to 3.5 months (May and Hymbaugh 1989).

In addition to this type of training, there are several other ways a woman could become sensitized to the risks associated with the consumption of alcohol during pregnancy and FAS. One way is from the warning labels on alcoholic beverages. A woman could also learn of these risks from her doctor or another health care provider, from the popular press and television, from discussions with family or friends, or from WIC counselors (WIC refers to the Special Supplement Food Program for Women, Infants, and Children.)

The Surgeon General issued an advisory in July of 1981 that women who are pregnant or considering pregnancy should not drink alcoholic beverages, and that they should be aware of the alcoholic content of foods and drugs (Food and Drug Administration 1981). Federal legislation was enacted

in late 1989 requiring that the following warning label be added to alcoholic beverage containers (U. S. Congress 1988). The labels state:

**GOVERNMENT WARNING: (1) ACCORDING TO THE SURGEON GENERAL, WOMEN SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PREGNANCY BECAUSE OF THE RISK OF BIRTH DEFECTS. (2) CONSUMPTION OF ALCOHOLIC BEVERAGES IMPAIRS YOUR ABILITY TO DRIVE A CAR OR OPERATE MACHINERY, AND MAY CAUSE HEALTH PROBLEMS.**

Clearly, for the warning labels to be effective they must be seen and must be persuasive. Andrews and his colleagues (1991) investigated the believability of the warning labels. Their data showed that occasional users and nonusers were more likely to believe the labels, and that the warning information might be partially ignored or discounted by frequent alcohol drinkers. In another study, researchers found that the labels had only a small impact on drinking during pregnancy. Although light drinkers decreased their consumption of alcoholic beverages, heavier drinkers did not heed the warning (Hankin et al. 1993). Hankin and colleagues more recently reported that multiparous women, who have the highest risk for FAS, have not

reported any decline in drinking during pregnancy since the labels have been instituted. Nulliparous women, on the other hand, have reported reduced drinking when pregnant (Hankin et al. 1996). Nulliparae are at much lower risk for producing a child with FAS.

Thus, bottle labels have been consistently found to be most effective with the youngest and lowest risk women (those who have never had a baby) and least effective among the highest risk women (those who have had several previous children and are older). This does not indicate that bottle labels will have any major effect on eliminating FAS births any time soon.

Turning our attention to the contribution physicians and health care providers have made in increasing knowledge, some data are available from Oklahoma, a State with many American Indians. As part of Oklahoma's Pregnancy Risk Assessment Monitoring System, women were asked two questions: (1) "When you went for prenatal care, did a doctor, nurse, or other health worker ask you if you were drinking alcoholic beverages? (beer, wine, wine coolers, or liquor)" and (2) "Did a doctor or nurse talk with you about how drinking during pregnancy could affect your baby?" Almost 90 percent of the women answered affirmatively to the first question, and 72 percent answered affirmatively to the second. Interestingly, Indian and African American women were significantly more likely to be asked and counseled than were white women (Oklahoma State Department of Health 1991-95).

The popular press and television have made a substantial contribution in disseminating FAS information. Many social scientists give credit to Michael Dorris' book *The Broken Cord* (1989) and the television movie made from this book as the way most people first became aware of the problem of FAS. Additionally, a discussion of FAS appeared in the February 1992 edition of *National Geographic* (Steinmetz 1992), which is widely available.

Social networks are another important source of information. Researchers in the area of health communications have found that discussions about prevention messages are more effective in changing behavior than the original message itself (Rogers et al. 1996).

Finally, women may be provided information concerning the dangers of drug abuse (during pregnancy) from counselors within welfare programs. Indeed, WIC counselors are charged with this responsibility (U.S. Congress 1966, as amended by U.S. Congress 1988).

#### CURRENT KNOWLEDGE ABOUT FAS

Studies have explored the amount of knowledge various ethnic groups, including American Indian women, have about FAS; two of these studies have focused on American Indians. Robinson and his colleagues interviewed 123 American Indian women in Vancouver, British Columbia, Canada and found that they had received information about alcohol from a variety of sources: family, school, the media, and counselors in alcohol or other drug treatment pro-

grams. Within this sample, 96 percent knew that consuming alcohol during pregnancy could be harmful to the fetus. However, even though there was a high degree of general knowledge, the respondents were less informed about causation, characteristics, and the implications of FAS (Robinson et al. 1992). In another study, which included 76 American Indians living in California, respondents were somewhat less knowledgeable; only 74 percent were aware of the effects of alcohol on the fetus (Shostak and Brown 1995).

The data from these two studies can be compared with data from a considerably larger national sample of all ethnic groups. Dufour and colleagues analyzed data from the 1985 and 1990 Health Promotion and Disease Prevention supplements from the National Health Interview Survey. Most of the women were aware that heavy drinking increased the risk of miscarriage, mental retardation, low birth weight, and birth defects (percentages of knowledge ranged from the high 80s to the low 90s). Encouragingly, the degree of knowledge increased from 1985 to 1990. However, the percentage of women who had specifically heard about FAS was lower, 62 percent in 1985 and 73 percent in 1990 (Dufour et al. 1994). Therefore, American Indians in the Robinson et al. study and the Shostak and Brown study were as knowledgeable or more knowledgeable about FAS than the general population in the United States.

Nevertheless, as Fitzgerald (1988) reminded us, knowledge alone will not

prevent FAS. Since FAS is caused by the very heaviest drinking women who are believed to be most resistant to behavioral change, "knowledge only" programs will not be successful in preventing FAS (see also Hankin et al. 1993, 1996).

In summary, it appears that Indians do know a great deal about FAS, maybe more than many other segments of the U.S. population. Certainly, there seems to be more community-based prevention and intervention activity among Indians than found in most non-Indian communities.

#### TREATMENT OUTCOME STUDIES OF FAS WOMEN

Treatment of heavy and problem drinking among women is an obvious way to prevent future FAS, ARBD, and ARND. One treatment outcome study was carried out in Tuba City, Arizona, among the western Navajo. Using data that served as a snapshot of the program after 18 months of operations, Masis and May (1991) described a program using a dual approach (both alcohol reduction/cessation and birth control advocacy) to prevent FAS through a system of case management. It appeared to be highly successful.

Through early screening in the IHS clinics, a total of 48 women had been contacted and 39 taken into the program during the 18 months. Many were admitted while pregnant. A majority of these women had either reduced their drinking (10.3 percent) or completely quit drinking (46.2 percent) with the assistance of the program. Additionally, 25.7 percent

began voluntary birth control when offered. Also after 18 months, approximately one-third of the 11 highest risk women (those who had had previous FAS and FAE children) were either not drinking or were on birth control, thus making prevention of further FAS births likely.

In all, the proxy measures of prevention (reduced drinking and increased birth control) appeared to demonstrate positive results. The most important outcome measure, the overall incidence of FAS and other diagnosable fetal alcohol damage in the service area, did not increase or decrease during the time when the program was in operation. However, no control community or control group was used in this study, so the true effect of the program on FAS rates cannot be measured. Control groups should be used in the next evaluation of this program or similar programs.

## FUTURE RESEARCH

In the 1996 IOM report, a number of recommendations were made about more research in a variety of areas. Highlighted below are those that were made by IOM and that apply very directly to the American Indian situation.

As recommended in chapter 5 of the IOM report, an active case-finding approach is the best way to establish the true prevalence of FAS in a population. Because virtually all active case ascertainment research in the United States has been done on American Indians, the knowledge of FAS prevalence and epidemiology is in many ways the most complete in Indian

populations. However, gaps in our knowledge still exist, which implies that more complete studies are needed. Indian communities are excellent sites in which to carry out such research, partly because of the apparent willingness of the populations to understand the gravity of the problem and the need to prevent it for the future. Furthermore, the advantages of the systemic, centralized health care, public health, and tribal social service programs are very important.

IOM also recommended that prevalence surveys be repeated periodically. The epidemiologic studies described in this chapter can be replicated for further knowledge, and they could be particularly useful to gauge any improvement in FAS prevalence that may have resulted from prevention or intervention activities.

Another IOM recommendation was that better epidemiology of women's drinking be established. The report proposed that studies of pregnant women should be expanded and, where possible, should include measurement of psychological, social, environmental, dietary, and other factors that may influence women's drinking behavior and fetal outcome (IOM 1996, chapter 6). There have been very few studies of female Indian drinking patterns, particularly in these areas. Where studies do provide results for both males and females, the importance of male data seems to be consistently emphasized over that of the females. In light of this deficit, a standardized set of questions carefully tailored to women's issues and included in various health surveys

used in Indian country would benefit our understanding of the etiology of and, subsequently, the prevention of FAS. Of particular importance would be detailed studies of women who have successfully quit drinking after long periods of heavy use (i.e., women who have "matured out" of their drinking problems). Both female alcohol abuse prevention and FAS prevention could be advanced greatly from such studies.

Risk factor studies of females should be pursued in a number of tribal locations. It would be beneficial to conduct case-control studies of female drinkers and nondrinkers in several representative tribal sites. Additionally, detailed studies of those women who had similar drinking levels during pregnancy but differential outcomes in terms of fetal alcohol symptoms might be undertaken. Why do some women who drink substantial amounts of alcohol during pregnancy produce relatively normal children, while others who drink at similar levels have children with FAS? Such studies would provide a better understanding of the host risk factors, both biological and social/psychological, that are involved in FAS severity.

A number of prevention/intervention outcome studies were recommended by the IOM report (chapter 7). Longitudinal studies of prevention activities should be undertaken in a variety of populations, but they are particularly promising in Indian populations. There may be no better communities for these prevention studies, because Indians have a substantial base knowledge of FAS, relatively lit-

tle denial about this problem when compared with non-Indian communities, and a strong commitment to protect individuals in their tribe and community. Furthermore, many groups have maintained traditional norms, values, and cultural practices, which can be used in concert with basic Western interventions to enhance the number and type of approaches and tools available for prevention. For example, focus groups with Indian women on three reservations and one urban group suggested that messages on FAS/FAE should provide hope, show reality, and reinforce traditional beliefs (McCarthy 1994). Comprehensive Indian prevention programs (see May 1995) could be carried out in a circumscribed catchment area characterized by a great deal of energy, activity, and enthusiasm.

"Abstinence only" messages are nothing new to Indian populations, most of which have fairly conservative norms about drinking (May and Smith 1988). Therefore, messages of abstinence during pregnancy will not be a shock, as they have seemed to be in some non-Indian communities in which we work. The IOM report recommended that abstinence messages for pregnant women are the most appropriate since there is no established threshold or a clear dose-response relationship at low levels established to date (pp. 27 and 118-119).

The IOM report also recommended a comprehensive approach to prevention that improves upon some of the previous conceptual models using the terminology of *primary, sec-*

ondary, and tertiary prevention (see May 1995). Instead, IOM recommends using the terminology of *universal*, *selective*, and *indicated* prevention of FAS (pp. 112–116). The advantage of this new terminology is that it not only uses public information and intervention programs in targeting selected subgroups of high risk, but it also advocates targeting individuals for long-term treatment and dealing with the aftercare and secondary disability issues that both the mother and affected child need. American Indian populations might represent the most logical sites in North America for testing a comprehensive approach in an entire community. For all the reasons cited above, measuring the effects of a comprehensive program through proxy measures of outcome (e.g., female drinking behaviors, practices, and norms) and ultimate measures of outcome (e.g., prevalence of FAS or FAS symptoms) are tasks that are particularly promising in an Indian community.

In the last 20 years the hard work, energy, and collaboration of American Indians have contributed a great deal to everyone's understanding of FAS, ARBD, and ARND. By encouraging and supporting a number of intensive research projects, by designing and carrying out intervention and prevention programs, and by lending traditional norms and values concerning social solutions to behavioral health problems, Indians have helped advance the knowledge base of FAS etiology, the understanding of FAS characteristics, and the practical prevention approaches in large social systems. While the etiol-

ogy, biophysiology, neurodevelopmental dynamics, and dysmorphology of FAS are all very important and interesting, most of the prevention of FAS, ARBD, and ARND and the adequate care for affected individuals will come from social and behavioral interventions. With their concern and positive public health approaches to FAS issues over the years, a number of Indian communities have provided a foundation for understanding which might otherwise have been elusive for many years.

## ACKNOWLEDGMENTS

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## Chapter 14

# Comorbidity Between Alcohol Abuse/ Dependence and Psychiatric Disorders: Prevalence, Treatment Implications, and New Directions for Research Among American Indian Populations

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In recent years, the extent and implications of comorbidity among alcohol, drug, and mental (ADM) disorders—especially among adults—have received increasing emphasis in the literature (Bukstein et al. 1989;

Kessler et al. 1994; Warner et al. 1995; Alexander 1996; Greenbaum et al. 1996; Kessler et al. 1996a). To date, however, little attention has been directed toward these issues in American Indian populations.

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In this chapter, we first provide an overview of the dominant American psychiatric diagnostic system—the *Diagnostic and Statistical Manual of Mental Disorders* (DSM). After laying this groundwork, we briefly review the conceptual underpinnings of the research on comorbidity and the importance of culture in understanding comorbidity. We then summarize findings pertaining to the comorbidity between alcohol and other mental disorders for two groups: the U.S. general population and American Indians. In the Studies section, we present data from three recent efforts of the National Center for American Indian and Alaska Native Mental Health Research (NCAIANMHR). The Discussion section summarizes what is known about the comorbidity between alcohol and other mental health disorders among Native people. The chapter ends with a call for additional research in three areas of comorbidity.

### **DIAGNOSIS: AN ESSENTIAL CORNERSTONE OF COMORBIDITY**

In this chapter we use the definitions of mental health problems, including those designated as alcohol-specific, as determined by the DSM, which was developed by the American Psychiatric Association (APA) and has been revised on a regular basis (APA 1952, 1968, 1980, 1987, 1994). Although many have argued that nosological systems such as the DSM—or its international counterpart, the International Classification of Diseases

(ICD)—are inherently limited (Goldberg 1996; Regier et al. 1998), their use is widespread. Indeed, most health service systems currently require their use. An understanding of comorbidity assumes a familiarity with categorical systems such as the DSM.

Conceptually, diagnostic systems have their origins within medical or disease models of human problems, which are, in turn, inherently categorical. In other words, an individual is considered to have a disease or not—be it diabetes, a specific type of cancer, or alcohol abuse or dependence. Such systems often presuppose a medical or disease model of human distress, which assumes a biological basis for the observed behavior.

To receive a diagnosis, the person must meet the necessary and sufficient criteria as stated in the agreed-upon classification system. In some cases, diagnoses are based on the outcome of various medical tests, such as a blood analysis, magnetic resonance imaging, or other biomedical test. However, even with physical illnesses, diagnosticians must rely, at least in part, on a listing of symptoms reported either by the patient or by someone close to the patient. Currently the assessment of psychiatric disorders relies almost exclusively on subjective symptom reports; medical tests analogous to those for many physical disorders do not yet exist. The DSM represents the predominant American classification system for ADM disorders based on such symptom reports.

Later we will consider some of the weaknesses of nosological systems such as DSM, especially in the context of



culture. However, we would be remiss if we did not acknowledge the utility of such systems. Clinically, having a common system for defining problems is quite beneficial. It allows for the development of a common language and for assessments of effectiveness and efficacy—thus, their usefulness in health service systems. In the context of alcohol, different treatments may be called for depending on whether an individual is judged to be abusing alcohol or whether he or she has become physiologically dependent on alcohol. One could argue that prevention strategies might also differ. As other distinctions become accepted as meaningful, such as Cloninger's type I and type II alcoholism (Cloninger et al. 1988, 1995), the differential effectiveness of prevention and treatment trials can be assessed. Most relevant to this chapter, there already exists evidence that individuals with comorbid alcohol and certain ADM disorders may have a different course (and thus probably prevention and treatment strategies) than those with alcohol disorders alone (Kessler et al. 1996a, 1997). Thus we argue that, while one might not agree with all the assumptions underlying nosological systems such as DSM, they can be useful clinically and, in fact, are critical for services research.

DSM is now in its fourth edition (or fifth, if one considers DSM-III-R [APA 1987] to be distinct from DSM III [APA 1980]). DSM-I and DSM-II were published in 1952 and 1968, respectively. These manuals grew out of a need to standardize the use of diagnostic labels in mental health settings. DSM-III and DSM-III-R placed

greater emphasis on operational definitions of the disorders than had previous editions. Furthermore, these definitions were to be based on empirical studies with clinical populations and their utility validated in such populations. DSM-IV was released in 1994.

The releases of the DSM editions coincided with comparable work by the World Health Organization (WHO) on the ICD system. The development of the two systems is parallel in many respects (Compton and Guze 1995). Several authors have written about the overlap, as well as lack thereof, between the systems for alcohol abuse and dependence (Cotler 1993; Usten and Compton 1997). Reviews of the diagnostic criteria as well as relevant measures indicate that while the various systems are quite similar in terms of dependence diagnoses, there is less conceptual overlap between alcohol abuse in DSM-III-R and DSM-IV, for instance, or between alcohol abuse in either of the most recent versions of DSM and harmful use in ICD-10.<sup>1</sup>

The DSM system is multiaxial. Ideally, an individual is evaluated on several dimensions simultaneously. DSM has five axes: I. Clinical Disorders and

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<sup>1</sup> For instance, the DSM-IV criteria for abuse have been expanded over those of DSM-III-R. In the latter, a person must meet at least one of two criteria: (a) continued use despite knowledge of having a persistent or recurrent social, occupational, psychological, or physical problem that is exacerbated by the use of alcohol; and/or (b) recurrent use in situations in which use is physically hazardous. DSM-IV has two additional criteria: (a) recurrent use resulting in a failure to fulfill major role obligations and (b) recurrent substance-related legal problems.

Other Conditions That May Be a Focus of Clinical Attention; II. Personality Disorders and Mental Retardation; III. General Medical Conditions; IV. Psychosocial and Environmental Problems; V. Global Assessment of Functioning. In practice, the greatest emphasis is placed on Axis I disorders and on specific Axis II disorders that are clinically significant. In this chapter we consider a select list of Axis I and II disorders: specifically, alcohol abuse/dependence<sup>2</sup>; mood disorders, such as major depressive disorder (MDD) and dysthymia; anxiety disorders, such as panic disorder, generalized anxiety disorder, and social phobia; disruptive behavior disorders, such as conduct disorder and antisocial personality disorder (ASP); and posttraumatic stress disorder (PTSD).

The major DSM disorders (as defined by a combination of high prevalence and impact on service systems) are assessed using established methods that follow the DSM criteria. Measures such as the Diagnostic Interview Schedule (DIS) and Composite International Diagnostic Interview (CIDI)<sup>3</sup> (Robins et al. 1982, 1988; WHO 1990; Cottler et al. 1991; Wittchen 1994), Schedule for Affective Disorders and Schizophrenia (SADS) (Endicott and Spitzer 1978), Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) (First et al. 1997), and Psychiatric Research Interview for Substance and Mental Disorders (PRISM) (Hasin et al. 1998) reflect this tradition. The analogs for children and adolescents include the Diagnostic Interview Schedule for Children (DISC) (Costello et al. 1984;

Shaffer et al. 1996) and the Schedule for Affective Disorders and Schizophrenia for School-Aged Children (K-SADS) (Cohen et al. 1987; Kaufman et al. 1997).

Typically these assessments provide both lifetime and current diagnoses. In other words, information is provided about whether the person met the criteria for a specific disorder at some point during his or her lifetime, as well as whether he or she currently (typically defined as within the past 6 months or a year)<sup>4</sup> qualifies for the diagnosis. Ideally these measures can be used both with clinical and non-clinical populations. Respondents are asked to provide information about onset (when the problems started), recency (when they ended), and dura-

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<sup>2</sup>See the appropriate edition of DSM for the specific definitions of these diagnoses. For purposes of this chapter, the diagnoses of alcohol abuse and dependence can be summarized as follows. Alcohol abuse is characterized by at least one of the following in a 12-month period: recurrent alcohol use that results in not being able to fulfill major role obligations, recurrent use in physically hazardous situations, recurrent alcohol-related legal problems, or continued use despite persistent physical and/or occupational problems caused by alcohol. Alcohol dependence is characterized by the signs of alcohol abuse as well as use of alcohol in larger amounts or over longer periods; unsuccessful attempts to control alcohol use; spending a great deal of time acquiring alcohol or recovering from its effects; impairment in social, occupational, and/or recreational activities due to alcohol; increased tolerance; withdrawal symptoms; and continued use despite knowledge of having a physical or emotional problem caused or exacerbated by alcohol.

<sup>3</sup>The DIS was used in the Epidemiologic Catchment Area studies. The CIDI was based on the DIS but includes information for both DSM- and ICD-defined diagnoses.

tion (how long they persisted). As discussed later in this chapter, these estimates are essential to understand comorbidity. Diagnostic instruments also typically include measures of service utilization and of impairment in everyday functioning that might be attributable to the specific mental health problems.

### CONCEPTUAL UNDERPINNINGS OF COMORBIDITY

Although references to comorbidity may be found in medical writings since the time of Hippocrates (Wittchen 1996), the concept was first formally defined by Feinstein in 1970 as "any distinct additional clinical entity that has existed or that may occur during the clinical course of a patient who has the index disease under study." Regier and colleagues (1990) more precisely defined comorbidity as a "person's having more than one disorder at some time during his or her life" (p. 2512). Inherent in this definition is the importance of clearly defined diagnoses, the importance of time frames, and a lifetime perspective (Wittchen 1996). This chapter is generally restricted to a discussion of comorbidity between Axis I alcohol and common mental disorders. Although the comorbidity of alcohol with other substance disorders (such as marijuana or cocaine), as well as with other personality and physical disorders, is an important area of research, it is beyond the scope of this chapter.

In recent years, increasing attention has been directed toward the

meaning, prevalence, and consequences of comorbidity (Wittchen 1996). This heightened interest can be ascribed to the development of explicit criteria for mental disorders such as those provided by DSM or ICD. However, considerable conceptual ambiguity exists in our understanding of comorbidity. In comorbidity research, several conceptual issues are critical, most precisely defined by Wittchen (1996). He postulates that the lack of consensus with regard to both the definition of comorbidity and an underlying theoretical framework has led to a remarkable degree of variation in the findings in comorbidity studies. He suggests the following criteria as useful in the assessment of comorbidity studies.

- *Are the diagnoses well defined?* The term "comorbidity" should only be used when disorders are assessed according to an accepted operational definition. Not only should we know whether and what version of DSM/ICD was used, but also whether subthreshold diagnoses were included and whether exclusionary rules were implemented. For instance, in the context of the

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<sup>4</sup>Some authors discuss point prevalence, that is, whether the individual in question qualifies for a diagnosis on the day of assessment. Given that most DSM-defined ADM disorders require that the constellation of symptoms have occurred together for a set duration in order to be considered to reach diagnostic levels, most psychiatric epidemiologic efforts report the diagnosis as being current if the individual met the criteria sometime in the past 6 or 12 months. We use 12-month figures unless otherwise specified.

current chapter, how are alcohol problems defined? Are these defined according to DSM-III-R or DSM-IV, which included additional criteria for abuse? Are the rates specific to alcohol or are other drugs included? Are diagnostic hierarchies used? For instance, when considering comorbidity between alcohol disorders and MDD, one should know whether alcohol use was considered as a possible organic rule-out: that is, MDD should not be diagnosed when there is "an organic factor that initiated and maintained" the depression symptoms.

- *What are the levels of disorders discussed?* Is alcohol abuse considered a distinct entity from alcohol dependence, or are the two collapsed into alcohol abuse/dependence? What is meant when an author refers to "alcoholism"?
- *What is the time window?* Are lifetime diagnoses reported? If current, what is the time window (e.g., point, past month, past 6 months, past year)? Are temporal sequence or relative onsets considered?<sup>5</sup>
- *What are the assessment methods?* Even when the same version of DSM forms the basis of a discussion, the assessment methods might have a substantial impact (Regier et al. 1998). One important distinction is whether or not the assessment is a semistructured one and meant to be conducted by someone with extensive diagnostic training. Also referred to as interviewer-centered instruments, measures such as the SCID, PRISM,

and SADS rely extensively on clinical judgment. On the other hand, respondent-centered instruments or structured interviews (e.g., the DIS/CIDI or the DISC) are designed to be administered by laypersons and rely on the respondent to determine whether a symptom reflects his or her experience. In terms of alcohol diagnoses, one might argue that respondent-based assessments of alcohol disorders are vulnerable to an underreporting of symptoms (i.e., denial); to our knowledge, though, little has appeared in the literature on this possibility.

- *How is the study designed and how are the data analyzed?* Here we are interested in such matters as sampling and the presence of other variables in the analyses. For instance, there is reason to believe that one finds different patterns of comorbidity when clinical samples are used rather than population-based samples (Raskin and Miller 1993). Furthermore, there is evidence that men and women may show different patterns of comorbidity (Hesselbrock et al. 1985a; Kessler et al. 1997); if gender is not controlled for in the analyses, the findings might be biased.

At this point, little standardization exists along these dimensions. Thus, comorbidity findings are often almost

<sup>5</sup>Determination of primary versus secondary disorders is accomplished by the examination of relative onsets. Typically, a respondent is asked to report first and last occurrences of specific symptoms or groups of symptoms. With this information, relative onsets of comorbid disorders can be assessed.

impossible to compare.<sup>6</sup> Also important in reviewing comorbidity studies is an understanding of the authors' underlying conceptual framework for why comorbidity occurs. Intrinsic to comorbidity is a struggle to determine the degree to which comorbidity represents a true underlying relationship or is artifactual (Davidson and Ritson 1993; Schuckit et al. 1994; Lehman 1996). For instance, it is well known that alcohol is a sedative and a depressant. Therefore, when in the addictive course is a diagnosis of a mood disorder valid (Schuckit 1983; Davidson and Ritson 1993)? Similarly, several authors have argued that the symptoms present during alcohol withdrawal mimic those underlying the diagnosis of some anxiety disorders; therefore, diagnoses of comorbid anxiety disorders should not be made while patients are in withdrawal (George et al. 1990; Brady and Lydiard 1993; Schuckit and Hesselbrock 1994). Others have argued that both depressive and certain anxiety disorders have common antecedents (see Pickens et al. 1995 for a discussion of

the common genetic underpinnings of certain comorbid disorders). One's conceptual framework, and thus research design, will influence the results found and must be considered in understanding the findings.

In summary, comorbidity exists when a person qualifies for two or more disorders within the same time frame. Investigators often report both lifetime and current comorbidities. In reviewing studies it is critical to consider what is measured, the levels of disorder discussed, time frames, assessment methods, research designs, and analytic strategies. Although there is little standardization in terms of these factors at this point, awareness of their importance is growing. To our minds, comorbidity is a complicated scientific construct, about which much has been written in recent years but with little consistency. We see comorbidity research among American Indian populations as a useful mechanism to reach multiple audiences and to understand, and sometimes critique, the dominant paradigm of "mental disorder" in the country today.

<sup>6</sup>Interested readers are referred to a 1998 article by Regier and colleagues, where the rates of the two preeminent American psychiatric epidemiologic studies are compared and critiqued. The Epidemiologic Catchment Area (ECA) studies conducted in the 1980s have had an enormous impact on furthering and refining the research agendas of those interested in psychiatric epidemiology as well as considerable impact on public policy. The National Comorbidity Survey was conducted in the early 1990s and, somewhat unsettlingly, found higher rates for most disorders than did the ECA. If one uses Wittchen's criteria, it is clear that the two studies differed in meaningful ways on most of these dimensions.

## IMPORTANCE OF UNDERSTANDING CULTURE IN COMORBIDITY RESEARCH

Psychiatric anthropologists have documented various culture-specific symptoms and syndromes, some of which are not defined by DSM or other nosological systems. For instance, Guarnaccia's work documenting the cultural validity of *ataques de nervios*

(Guarnaccia and Farias 1988; Guarnaccia et al. 1989a, 1989b, 1993) among Latino populations provides an example of a syndrome that appears to be culturally bound, as does Kleinman's work on neurasthenia among the Chinese (Kleinman 1988). These syndromes do not have direct corollaries in classification systems such as DSM, yet are classified within the resident cultures as mental health problems with related impairment. Our earlier work among the Hopi yielded similar insights, demonstrating that five indigenously defined illnesses were evident, common, and, although resembling aspects of the depressive experience, did not map directly onto DSM (Manson et al. 1985). Discovery of these culture-specific symptoms and syndromes may lead one to question the extent to which other classification systems are also culture-bound.

DSM has come under considerable criticism over the years as reifying European and American ethnopsychological constructs (Good 1993). It has been pointed out that both the reductionistic approach implicit in DSM and the categories developed within such systems may be culturally bound. Lock (1987) wrote that the decontextualized approach of DSM, which focuses only on signs and symptoms that are tangible and (preferably) observable, is itself culture-bound by its origins in Aristotelean logic, which seeks to categorize and establish boundaries for specific types of human experience. In focusing attention on universal rather than unique experiences, this approach also lends itself to the conclusion that such categorizations are acultural.

Even if the categorization systems are considered universal and useful, it is probable that the symptom expression and its measurement will be influenced by culture. Many of the current diagnostic measures assume that expression will be common and, furthermore, that respondents or patients being asked to report about their own internal states will be able to distinguish between categories and to provide valid responses. Maser and Dinges (1993) point out that this assumption is most probably unfounded and that the age of onset, symptomatology, natural course of the disorder, its social distribution, reaction to treatment, and consequences to patient are all things that can vary by culture.

We will return to this theme in the Discussion section. We now move to a brief examination of what is currently known about the prevalence of comorbidity between alcohol and mental disorders and the implications such comorbidity appears to have for service utilization and treatment outcomes. Readers should remain mindful that these studies often consider diagnosis and comorbidity to be acultural in their conceptualization, symptom expression, and measurement. (See Manson and Kleinman 1998 for further discussion of these issues.)

### RESEARCH FINDINGS ON COMORBIDITY BETWEEN ALCOHOL AND OTHER DISORDERS

Until recently, much of the literature on the prevalence of comorbidity between alcohol and other disorders

has derived from research with clinical populations—in either psychiatric treatment settings or alcohol and other drug (AOD) treatment settings. Typically, more than half of those in psychiatric settings are likely to also qualify for a substance abuse diagnosis. This appears to be especially true for individuals with diagnoses of ASP, somewhat less so for those with diagnoses of bipolar disorder or schizophrenia, and least for those with unipolar depression and anxiety disorders (Raskin and Miller 1993).

On the other hand, when similar studies have asked addiction specialists in AOD treatment units to identify comorbid psychiatric disorders among their patients, the degree of psychiatric disorder is not much greater than in nonclinical or community populations (Raskin and Miller 1993). However, when standardized psychiatric assessment measures are used in such settings, comorbidity rates between 54 percent and 75 percent for another non-substance-related disorder are common (Hesselbrock et al. 1985*b*; Hasin et al. 1988; Ross et al. 1988; Herz et al. 1990; Brown et al. 1995; Tomasson and Vaglum 1995). Anxiety disorders, mood disorders, and ASP typically are the most prevalent mental health problems found in these settings, although some evidence suggests that ASP is more prevalent among men, while women are more likely to be diagnosed with depressive disorders (Hesselbrock et al. 1985*b*). To date, little of this work has used relative onset data to differentiate between primary and secondary disorders.

Studies of clinical populations clearly have significance in terms of treatment implications and, we would argue, for understanding the mechanisms underlying comorbidity; however, they are of limited utility in understanding the prevalence of comorbid alcohol and mental health problems. A mention of Berkson's bias is important here. Berkson (1946) stated that comorbidity rates should be expected to be elevated in treatment settings because those individuals with more problems are more likely to seek treatment. When considering the differential findings presented in the preceding paragraphs about higher rates of alcohol and psychiatric comorbidity reported in mental health than in addiction settings, it is possible that Berkson's bias is more influential in mental health environments than in their addiction counterparts. It is also possible that clinicians in mental health settings are more ensconced in the DSM view of life problems and therefore more sensitive to manifestations of comorbidity within this framework. Clinicians in addiction settings may, for many reasons, be less likely to actively pursue classification according to the DSM or other nosologies. Other explanations for this discrepant pattern of findings also exist—for instance, differential assessment methods and research designs. Within clinical settings, it is difficult to disentangle such competing explanations. Therefore, we turn to population-based studies for a better understanding of the prevalence of comorbidity, as well as the service and treatment implications.

## PREVALENCE OF ALCOHOL COMORBIDITY IN THE GENERAL POPULATION

### Prevalence Among Adults

The two major community-based studies that include comorbidity as a focus are the Epidemiologic Catchment Area (ECA) studies and the National Comorbidity Survey (NCS). The ECA studies provided initial findings relevant to this subject for adults (Regier et al. 1990; Robins and Regier 1991). Overall, the prevalence rates for alcohol abuse/dependence as assessed by the Diagnostic Interview Schedule Version III (DIS-III) (Robins et al. 1981*b*) were 2.8 percent, 4.7 percent, and 13.3 percent respectively for 1-month, 6-month, and lifetime diagnoses. These figures are based on weighting the ECA samples to the U.S. population as assessed in the 1980 census (Regier et al. 1990). Of those qualifying for an alcohol abuse/dependence diagnosis, 37 percent also qualified for another non-substance-related diagnosis at some time in their lives (Regier et al. 1990). In fact, those with alcohol diagnoses (abuse or dependence) were 2.8 times more likely to have another psychiatric diagnosis than were those without alcohol problems (Helzer and Pryzbeck 1988).

The ECA studies also showed that those with mental disorders were 2.3 times more likely to have an alcohol disorder than those without a mental disorder (Regier et al. 1990). The most common comorbid diagnoses were anxiety disorders (odds ratios [ORs] 1.4–2.4), ASP (OR 21.0), and mood

disorders (ORs 1.8–6.2). Females were more likely to have more additional diagnoses than were males (Helzer and Pryzbeck 1988). Furthermore, among men and women who had sought treatment in the past year, over 50 percent had comorbid disorders.

The NCS, which was conducted by Kessler and colleagues (Kessler et al. 1994, 1996*a*; Nelson et al. 1996; Kessler et al. 1997), has provided perhaps the best data to date on comorbidity, with a nationally representative sample of the U.S. population. Kessler and colleagues (1994) reported the overall prevalence of alcohol abuse as 2.5 percent for 12-month and 9.4 percent for lifetime. Alcohol dependence was more prevalent: 7.2 percent for 12-month and 14.1 percent for lifetime. The base rates for MDD (lifetime and 12-month) were 17.1 percent and 10.3 percent; for any anxiety disorder, 24.9 percent and 17.2 percent; for any drug abuse/dependence, 26.6 percent and 11.3 percent. ASP and PTSD rates were assessed for lifetime only and were 3.5 percent and 7.8 percent, respectively (Kessler et al. 1994).

The NCS group reported that 41 percent of those with alcohol abuse/dependence qualified for at least one mental disorder (Kessler et al. 1996*a*). The ORs were reported separately for men and women and by abuse and dependence (Kessler et al. 1997). Alcohol dependence generally has a stronger relationship with other disorders than does alcohol abuse—this is especially true for non-substance disorders. The largest ORs are with other substance disorders, followed by



conduct disorder and ASP, then by anxiety and mood disorders. For those with comorbid disorders, the majority reported that the alcohol disorder appeared after the mental disorder. Furthermore, those with comorbid alcohol dependence and mental disorders were more likely to receive treatment than those with alcohol dependence alone, and this treatment was received in more sections of the health care system—not simply in addiction or mental health settings.

The ECA and the NCS are the dominant adult population-based psychiatric epidemiology studies in the United States. In recent years, this type of effort has been conducted internationally (Kessler 1999; WHO 2000) as well as with important U.S. subpopulations (including a recently completed American Indian study). We will not review these studies in this chapter in any detail, nor will we review the detailed comorbidity studies of specific pairs of disorders (e.g., alcohol and depressive disorders, alcohol and anxiety disorders, or alcohol and PTSD); for more information on the comorbidity patterns of these pairs of disorders (or dyads), see Kushner et al. 1990; Hasin and Glick 1993; Schuckit and Hesselbrock 1994; Marshall 1996; Stewart 1996; and Marshall 1997. We will, however, review what is known about these dyads from the ECA, the NCS, and related studies.

The NCS was designed to examine comorbidity; several papers using these data, as well as those collected by others, have examined the relationship between depressive and alcohol disorders. Kessler et al. (1996*b*) reported

that those with MDD were more likely to qualify for alcohol dependence (both lifetime and 12-month), but not for abuse. An international task force has used five international studies—two from Switzerland (Basel and Zurich), one from Germany (Munich), and two from the United States (ECA and Puerto Rico)—to examine the relationship between MDD and other disorders. In three of the four studies in which both alcohol and MDD were assessed, alcohol had a significant relationship with MDD, with ORs of about 2.0 (Merikangas et al. 1996). The relationship was stronger for women than for men. In terms of relative onset, for about 40 percent MDD preceded alcohol, for another 40 percent MDD postdated alcohol, and for 20 percent MDD and alcohol began concomitantly. The same task force examined MDD and dysthymia with alcohol for the ECA, NCS, Puerto Rico, and Zurich studies and found that those with lifetime alcohol abuse/dependence were 2.3 and 3.8 times more likely to qualify for either lifetime MDD or dysthymia (Swendsen et al. 1998). The comparable ORs for 12-month rates ranged between 2.3 and 4.5.

Using NCS data, Kessler and colleagues (1996*a*) reported that individuals with 12-month and lifetime alcohol dependence were 2.6 and 2.1 times as likely as those without alcohol dependence to have an anxiety disorder. The relationships with alcohol abuse were less clear; those with current alcohol abuse diagnoses were more likely to qualify for a comorbid anxiety disorder, but those with a life-

time alcohol abuse diagnosis were not. With regard to specific anxiety diagnoses, it appears that those with alcohol dependence are at highest risk for generalized anxiety disorder for both 12-month and lifetime diagnoses. With the exception of 12-month panic disorder, those with either 12-month or lifetime alcohol dependence are at higher risk for each type of anxiety disorder than are those without alcohol dependence. The relationship between alcohol abuse and anxiety disorders is much less evident. Among those with comorbid alcohol and anxiety disorders, the vast majority of respondents reported that their anxiety disorders predated their alcohol disorders.

In the cross-national study of comorbidity between alcohol and anxiety and depressive disorders, Swendsen and colleagues (1998) reported ORs for anxiety disorders ranging between 2.08 and 2.49 lifetime and between 2.10 and 3.26 for 12-month alcohol abuse/dependence. The data from the ECA, NCS, Puerto Rico, and Zurich studies examined by the task force provide some evidence that agoraphobia and panic disorder may have a particularly strong relationship with alcohol abuse/dependence. Whereas depressive disorders were equally likely to precede and come after alcohol disorders, the majority of respondents reported that alcohol disorders occurred after their anxiety disorders.

To date, the NCS and similar studies have had less to say about the relationships between alcohol disorders and other DSM-defined problems. Two deserve special mention, however—

PTSD and conduct disorder/ASP. PTSD is a relatively new diagnosis and has only recently been included in psychiatric epidemiologic efforts. Kessler and colleagues (1995) reported that men with PTSD were 2.08 times more likely to have alcohol abuse or dependence, while women had an OR of 2.48. Bromet and colleagues (1998) explored the data further and determined that the relationship between risk factors, including substance use, and PTSD was largely explained by the increased trauma exposure. This suggests that those using alcohol to excess are more likely to have experienced trauma, and thus suffer from PTSD. These findings fit with other, more targeted investigations of PTSD. We include this disorder because we think it is especially relevant to Native populations.

The relationship between conduct disorder/ASP and alcohol problems is typically strong. To some degree this is an artifact of the symptom overlap of these diagnoses. For instance, in the CIDI, having been arrested for DUI (driving under the influence) is considered an indicator of ASP, as is neglecting one's family and other social roles. These are also symptoms of alcohol abuse and dependence. On the other hand, based on the work of Cloninger and others, there is reason to believe that ASP symptomatology may differentiate those with different drinking histories and treatment outcomes—and that the two may have some common etiologic factors. At this point, we conclude that we would expect a strong relationship between ASP and alcohol disorders; however, the underlying

mechanisms to explain this relationship remain to be explored.

In summary, the comorbidity rates reported in this section relied on the two largest adult psychiatric epidemiologic studies in the United States to date. Alcohol disorders are among the most prevalent of the DSM-defined disorders, with 12-month prevalence rates of alcohol abuse and dependence ranging between 7 and 10 percent (ECA and NCS, respectively) and lifetime rates between 13 and 23 percent. (When these studies were compared and their methods standardized as much as possible, Regier and colleagues [1998] reported that alcohol dependence rates ranged between 4.4 and 7.4 percent for 12-month prevalence and between 11.3 and 14.9 percent for lifetime prevalence.) Those with alcohol disorders are at increased risk for mental disorders. Likewise, those with mental disorders are at greater risk for alcohol disorders. These relationships appear to be stronger for alcohol dependence than for abuse, and also stronger for women than for men. Those with alcohol disorders are at greatest risk for conduct and ASP disorders, but they are also at increased risk for anxiety and mood disorders as well as PTSD. When the relative onsets of alcohol and depressive disorder are examined, the alcohol disorder is equally likely to have preceded as to have followed the depressive disorder. Anxiety disorders may be more likely to precede alcohol disorders.

### Prevalence Among Children and Adolescents

Efforts to examine the prevalence of comorbidity among children and adolescents lag behind the adult ECA and NCS studies by several decades. Thus, no national population-based effort has examined the extent and impact of comorbidity among children and adolescents. The National Institute of Mental Health (NIMH) attempted to address this deficit, but the effort was suspended because of methodological and other problems. Three studies using local or regional samples deserve special mention, however.

A study conducted by Shaffer and colleagues focused on refinement of the DISC (Schwab-Stone et al. 1996; Shaffer 1996; Shaffer et al. 1996). Data were collected from 1,285 children ages 9–17 and their parents. These families lived in or near three metropolitan areas (Atlanta, New Haven, and New York) or in Puerto Rico. Given the idiosyncrasies of the sampling designs, any inferences to populations are risky. Based on the parent interviews, 0.5 percent of the children qualified for a substance abuse/dependence diagnosis; based on the child interview, the rate was 2.0 percent. When the prevalence rates were calculated based on combined parent/child data, the rates were 2.2 percent. To our knowledge, comorbidity was not examined.

Another study, completed by Lewinsohn and colleagues at the University of Oregon using the K-SADS, emphasized comorbidity (Lewinsohn et al. 1993, 1994*a*, 1994*b*, 1995).

This investigative group interviewed more than 1,700 high school students recruited from both urban and rural communities in western Oregon. Over 90 percent were white. The lifetime prevalence of alcohol abuse/dependence in this sample was 6.3 percent. The prevalence of substance abuse/dependence was 8.3 percent; this category included the rates for alcohol (4.6 percent) as well as the rates for cannabis (5.4 percent) and cocaine (2.6 percent). Major depressive disorder was the most prevalent diagnosis (18.5 percent). With regard to comorbidity, those with substance abuse/dependence were more likely to be diagnosed with a disruptive behavior disorder (OR = 5.6), a depressive disorder (OR = 4.5), and/or an anxiety disorder (OR = 2.2) (Lewinsohn et al. 1993).

The most recent child/adolescent study was conducted by Costello, Angold, and colleagues at Duke and Emory Universities. This study is of particular interest because it included a large ( $n = 323$ ) subsample of American Indian children and adolescents; that aspect of the study will be discussed in more detail in the next section. About 4,500 children ages 9, 11, and 13 living in an 11-county area in the southeastern United States were screened for psychiatric symptoms. Over 1,000 then received a more intensive assessment using the Child and Adolescent Psychiatric Assessment (CAPA), which provides DSM diagnoses. Extrapolating back to the full sample, only 0.1 percent qualified for a current (3-month) diagnosis of substance abuse/dep-

dependence. In separate analyses of these data, those using alcohol or other drugs were more likely to be diagnosed with behavioral disorders (Federman et al. 1997). The relationship between AOD use and emotional disorders was weaker and statistically significant only for girls. Evidence suggested that AOD use predated the psychiatric diagnoses for some youths and postdated them for others.

These three studies exemplify some of the problems inherent in current epidemiologic and, more specifically, comorbidity research. Each had a different sample design, used a different assessment instrument, and defined diagnoses somewhat differently. For instance, only the Lewinsohn et al. (1993) article separated alcohol from other drugs. Also, the time frames for the diagnoses were different in each case. The Shaffer et al. study highlights the problems associated with different reporters of a child's problems. Finally, where reports on comorbidity exist, their formats differ and make comparisons difficult. Whereas Lewinsohn et al. (1993) reported comorbidity of specific diagnoses, Federman and colleagues (1997) described the risks in terms of supradiagnostic categories such as behavioral and emotional disorders.

Even with these problems, two conclusions appear warranted based on these studies. First, as one would expect, the rates of alcohol (or substance) abuse/dependence are relatively low in samples of children and adolescents. Second, in both studies that examined comorbidity, substance-related disorders were associ-

ated with higher risks for other diagnosable disorders.

### PREVALENCE OF ALCOHOL COMORBIDITY IN THE AMERICAN INDIAN POPULATIONS

American Indian populations have received little attention in psychiatric epidemiology—regardless of whether the focus is on adults or on children and adolescents. Other than the work reported here and in progress at the NCAIANMHR, few population-based studies have been attempted in Native communities. While substantial anecdotal and qualitative data describe the impact of alcohol problems in Indian communities, extant data on prevalence rates of alcohol problems are typically from small samples or do not use culturally valid assessment strategies that allow comparisons to national efforts such as the NCS. That being said, we will review a handful of modest comorbidity studies in Native communities as well as one larger effort funded by the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

In 1991, NIMH sponsored the conference "Comorbidity of Depression, Anxiety, and Substance Abuse Among American Indians and Alaska Natives." The proceedings from this meeting were published in *Culture, Medicine, and Psychiatry* in volume 16, number 4. Three papers in these proceedings, by Dinges and Duong-Tran, Westermeyer et al., and Boehnlein et al., reported DSM-defined comorbidity among Native samples.

Dinges and Duong-Tran (1993) assessed the prevalence of disorders

using the DISC (Puig-Antich et al. 1983) among 124 boarding school students and found that about 44 percent of the youth had comorbid depressive and alcohol disorder; this comorbidity was more common for boys than for girls. Among a clinical sample of 100 Indian patients in treatment for alcohol, Westermeyer and colleagues (1993) reported that 43 percent had other mental disorders, including 21 with major depression, 9 with anxiety disorders, and 4 with conduct disorder/ASP.

In the only population-based effort before the 1990s, Kinzie, Shore and colleagues interviewed 100 members of a small community in the Northwest in 1969, and they were able to reinterview this cohort in 1988. In the original study, alcohol dependence was the most prevalent disorder (Shore et al. 1973). In a later article, they applied DSM-III-R criteria to these data and concluded that 42 percent of the original cohort had a diagnosis of alcohol dependence (Boehnlein et al. 1993). Of the 46 participants reinterviewed in 1988, 39 percent had a lifetime alcohol dependence diagnosis in 1969 and an additional 17 percent developed alcohol dependence since 1969. Of the 25 persons who had a lifetime diagnosis of alcohol dependence, 56 percent had a prior or current mental disorder, with the most common being mood disorders (10/25, or 40 percent) and PTSD (3/25, or 12 percent).

A recent effort by Robin, Goldman, and colleagues (Goldman et al. 1997; Robin et al. 1997a, 1997b; Long et al. 1998; Robin et al. 1998),

funded by NIAAA, provides data on a larger sample. A total of 582 individuals were sampled from the enrollment records of a tribe in the Southwest. Although this was primarily a genetic linkage study in which three large and interrelated pedigrees were investigated, the prevalence of common psychiatric disorders has been reported. Diagnostic data were collected using the Schedule for Affective Disorders and Schizophrenia—Lifetime (SADS-L); PTSD was assessed using the PTSD module of the SCID (Kulka et al. 1991; Spitzer et al. 1992). Overall 82.3 percent of the men and 50.5 percent of the women had lifetime diagnoses of alcohol dependence. Those with alcohol dependence were more likely to qualify for three or more disorders (ORs: men 4.54, women 5.73) (Robin et al. 1998). Although strong conclusions about population-based prevalence rates may not be warranted because of the family linkage design, this effort does represent the largest study to date in which comorbidity has been examined for an adult Native population.

As mentioned previously, a sizable American Indian subsample was included in the study by Costello et al. (1997). The 323 children were mostly Eastern-band Cherokee. Whereas the rate of substance abuse/dependence for the white sample was 0.1 percent, among the Indian sample this rate was significantly higher at 1.2 percent. Again, the dominant drug was alcohol. In fact, 9.0 percent of the Indian sample reported having used alcohol recently, compared with 3.8 percent of the white sample. Comorbid sub-

stance/psychiatric diagnoses were more common in the Indian sample than in the white sample (Federman et al. 1997). These researchers examined whether alcohol use predated or postdated psychiatric diagnosis for both the Indian and white samples. They concluded that alcohol use was more likely to follow emotional and behavioral diagnoses in the Indian sample.

The two most recent efforts (Goldman/Robin and Costello/Angold) represent enormous advances in our knowledge about the prevalence of alcohol abuse/dependence, and the comorbidity of these with other ADM disorders, in select Native samples. Both support the conclusion that the comorbidity of alcohol with other ADM disorders is at least as prevalent, if not more so, in Native populations as in other samples. While relative onsets were not examined in the adult study, the work by the Costello/Angold group suggests that alcohol is likely to be used after the onset of psychiatric problems (Federman et al. 1997).

Even taking these two recent efforts into consideration, however, relatively little work to date has examined the extent and implications of comorbidity among population-based samples of American Indian populations. While disheartening, this is to be expected. American Indians represent about 0.9 percent of the U.S. population (U.S. Department of Commerce 2001). Therefore, even large-scale efforts such as the ECA or the NCS do not include sufficient numbers of Native respondents for statistical descriptions. Psychiatric epidemiologic efforts are necessarily of a

large scale, and only recently have research groups evolved with the critical mass necessary to conduct such efforts. NCAIANMHR is one such group, and we will now describe three recent studies completed by NCAIANMHR researchers. Although these studies are small and focus on narrowly defined populations, they demonstrate the increasing sophistication of our work and of the field as a whole. Furthermore, as we will discuss later in this chapter, these efforts form the cornerstones for the large-scale population-based efforts that are so much needed in this area.

The first study presented (the Adolescent Treatment Project) is based on an adolescent treatment sample with data acquired mostly from medical charts. The second study also focused on adolescents (the Adolescent Community Project) but used a standard diagnostic assessment instrument, the DISC. However, as we will see, inferences from these data are limited because of the sample design. The third study (the American Indian Vietnam Veterans Project [AIVVP]) involved a population-based sample of American Indian Vietnam veterans and used culturally adapted standardized measures.

We begin with a brief description of the methods used in each study; specifically, the sample, diagnostic assessment strategy, and data collection procedures. We then explain how each study informs an understanding of the extent and implications of comorbidity between alcohol and mental disorders among American Indian populations.

## STUDIES

### ADOLESCENT TREATMENT PROJECT: COMORBIDITY AND SERVICE USE AMONG AMERICAN INDIAN ADOLESCENTS IN TREATMENT

This study was completed within a residential substance abuse treatment program for American Indian adolescents, with the aims of reporting on the levels of comorbidity within this setting and examining the relationship between psychiatric symptoms and receipt of mental health treatment. A full discussion of this project may be found in Novins et al. (1996).

#### Methods

*Sample.* Study participants were male and female American Indian adolescents in a tribally operated AOD abuse treatment program in the South Central United States (Novins et al. 1996). (In work with American Indian groups, maintenance of community confidentiality is as important as that of individual confidentiality. Therefore, in this chapter, general cultural descriptors are used in our work rather than tribal names.) Those admitted June 1, 1993, through May 31, 1994, were eligible for the study. The sample was composed of 64 patients; the average age was 16.3, and 33 different tribes were represented. Males constituted 53 percent of the sample.

*Diagnostic assessment.* All diagnostic measures were derived from intake data in the charts. Depression was assessed from the results of the Beck

Depression Inventory (Beck et al. 1961; Strober et al. 1981). Antisocial behavior was operationalized from four questions concerning violence toward others, vandalism, fire setting, and cruelty toward animals. These questions were also found in the intake questionnaire. Endorsement of any two of these behaviors was considered an indication of significant antisocial behavior. Finally, suicide attempts were assessed using an item in the intake questionnaire concerning previous suicide attempts. Given the necessary reliance in this study on chart data gathered for clinical rather than research purposes, these assessments only approximate DSM-III-R diagnoses.

*Procedure.* Dr. Novins abstracted the demographic and diagnostic data from medical charts. Dates of admission and discharge, tribal affiliation, and discharge type were gathered from the program's treatment log. Information from the medical records on fam-

ily therapy and mental health treatment was supplemented by information gathered in semistructured interviews with the patient's primary therapist and the program's family therapist.

## Results

Over 95 percent of the adolescents in this program used alcohol. The vast majority were polydrug users, with marijuana (over 75 percent) the most common drug of choice. Table 1 presents the findings from this study. High rates of comorbidity were found. Only 26.7 percent of the girls and 36.4 percent of the boys failed to have significant psychiatric symptoms. Disruptive behaviors were the most common comorbid problems. When the receipt of supplementary mental health treatment was examined, only 20.3 percent of the patients received this care, and girls were more likely to receive treatment than were boys. However, no relationship emerged

**Table 1.** Prevalence of Mental Health Disorders Among a Sample of Adolescents With Alcohol Abuse/Dependence: Data From a Clinical Sample.

	Females	Males	Gender Comparison	
			Test ( <i>df</i> )	Significance Level
<b>Type of Psychiatric Problems</b>				
Depression	45.5%	25.0%	$t = 2.3 (1)$	NS
Conduct problems	52.6%	46.7%	$t = 0.2 (1)$	NS
Previous suicide attempts	57.1%	33.3%	$t = 2.7 (1)$	NS
<b>Number of Psychiatric Symptoms</b>				
0	26.7%	36.4%		
1	40.0%	42.4%		
2	30.0%	21.2%	$\chi^2 = 0.7 (61)$	NS

Note: NS = not significant.



between the receipt of mental health care and the presence of psychiatric symptomatology (Novins et al. 1996).

### Conclusions

The results presented here replicate, in an American Indian adolescent treatment setting, some findings reported earlier in regard to the general population. Specifically, in this treatment setting notable comorbidity existed between drugs (mostly alcohol) and significant psychiatric problems of depression, antisocial behavior, and suicide attempts. It is unclear whether those working in this setting recognized these levels of comorbidity. It is clear, however, that the presence and level of psychiatric symptoms were not predictive of receipt of appropriate services.

### ADOLESCENT COMMUNITY PROJECT: FLOWER OF TWO SOILS REINTERVIEW

#### Methods

*Sample.* The adolescents interviewed for this study resided in a Northern Plains community (Beals et al. 1997) and were a subsample of those who participated 6 years earlier in another project ( $n \approx 251$ ). At the time of the earlier data collection, they were second and fourth graders. Due to funding limitations, the current sample was restricted to those who were still living on their home reservation and who could be located (45 percent). The majority of those reinterviewed were still in school (92 percent). In all, 113 of the original students were located

from the original study; 2 of these students refused to participate and 2 were deceased. Thus, 109 adolescents participated in the study. Approximately half were girls ( $n = 54$ , 49.5 percent). Eight percent were eighth graders, and the rest were in high school: 48 percent freshman, 14 percent sophomores, and 30 percent juniors.

*Diagnostic assessment.* The DISC, Version 2.1C (Shaffer et al. 1988), is a highly structured diagnostic psychiatric interview designed for use by lay interviewers in epidemiologic studies of children and adolescents. Its methodologies are similar to those used in the adult interview, the DIS (Robins et al. 1981a; Anthony et al. 1985; Helzer and Robins 1988). Methodological studies of the DISC were completed to refine and evaluate this instrument; they indicate that the DISC is an acceptable instrument with good interrater reliability (Shaffer et al. 1993), adequate to good test-retest reliability (Schwab-Stone et al. 1993), excellent sensitivity and moderate specificity (Fisher et al. 1993), and adequate concurrent validity (Piacentini et al. 1993).

The DISC consists of six diagnostic modules; in this section we summarize data from four of these: Anxiety Disorders (separation anxiety and overanxious/generalized anxiety), Mood Disorders (major depression, dysthymia), Disruptive Behavior Disorders (attention-deficit hyperactivity disorder [ADHD], oppositional defiant, and conduct disorders), and Substance Use Disorders (only alcohol abuse dependence is reported here).

Within each module, the presence, severity, and duration of symptoms of several diagnoses were ascertained for the most recent 6-month period.

The prevalence rates in the current study were calculated using the diagnostic algorithms and the disorder-specific impairment criteria. To receive a diagnosis, a respondent had to have endorsed one of the three to five impairment questions included in each module. For example, in the Anxiety Disorders module, the question is asked: "Has worrying about this or feeling nervous made it harder for you to do things with friends or other people?" Assuming the child or adolescent meets the criteria for a diagnosis, a "yes" to this item indicates that the disorder is impairing his or her functioning (Shaffer et al. 1996).

*Procedure.* The data were collected between March and June 1991. Eight Indian interviewers were trained in the use of the DISC. Interviews were conducted in a school setting and lasted approximately 2 hours. All completed interviews were reviewed

and edited by the NCAIANMHR staff. A full description of this study may be found in Beals et al. (1997).

## Results

Eleven percent of the Northern Plains youth sampled qualified for a diagnosis of alcohol abuse/dependence (Beals et al. 1997). Furthermore, 5.5 percent of the youth qualified for at least one anxiety disorder, 4.7 percent for a mood disorder, and 13.8 percent for a disruptive behavior disorder. Table 2 compares the prevalence of these mental health disorders for adolescents with and without alcohol abuse/dependence. It is clear that those with alcohol abuse/dependence were at greater risk for disruptive behavior disorders; there was also a trend toward greater vulnerability to mood disorders. Comparing comorbidity data from this study with data from the Oregon Adolescent Depression Project, 7 percent of the Northern Plains sample had comorbid alcohol abuse/dependence and disruptive behavior disorders (Beals et al.

**Table 2.** Prevalence of Mental Health Disorders Among Adolescents With and Without Alcohol Abuse/Dependence: Data From a Community Sample.

Type of Mental Health Disorder	% of Those Without Alcohol Abuse/Dependence	% of Those With Alcohol Abuse/Dependence	Significance Level <sup>a</sup>
Anxiety disorders	17.5	16.7	0.94
Mood disorders	12.4	33.3	0.08
Disruptive behavior disorders	18.6	50.0	0.02

<sup>a</sup>Based on a  $\chi^2$  with 1 degree of freedom.

1997) compared with 2.1 percent ( $p < 0.01$ ) of the largely white, middle-class high school students in Oregon (Lewinsohn et al. 1993).

### Conclusions

Although this sample is limited and the analyses presented here quite simple, we can conclude that for these youth, alcohol abuse/dependence was more prevalent than among some other samples of adolescents (although perhaps not as high as some would expect). Furthermore, we can conclude that comorbidity of alcohol and other psychiatric disorders was noteworthy among these youth. In more recent analyses of these data, Novins et al. (2000) reported that only 39 percent of those with diagnosed problems reported ever having used services for alcohol or mental problems. The majority received these services through school, and only one youth had received services from a mental health specialist. A majority of those with diagnoses who had *not* received services were recognized by an adult as needing treatment.

### AMERICAN INDIAN VIETNAM VETERANS PROJECT

The Research Triangle Institute conducted the National Vietnam Veterans Readjustment Study (NVVRS) in the late 1980s for the Veterans Administration (VA), operating under a congressional mandate. The differential rates of PTSD found for Hispanic and black male Vietnam theater veterans compared with white/others in that research effort have had considerable

impact on VA services for these minority groups. Consequently, in 1990, Congress mandated a supplementary followup to the NVVRS to establish prevalence rates for other minority groups, including American Indians. The AIVVP was designed as a replication of the NVVRS (Kulka et al. 1990) and was conducted by the NCAIAN-MHR. Greater detail about AIVVP may be found in the final report (National Center for Post-Traumatic Stress Disorder [NCPTSD] and NCAIANMHR 1996) and a more recent paper about the PTSD rates found in AIVVP (Beals et al. in press).

### Methods

*Sample.* Two samples of American Indian male Vietnam theater veterans were included: one from a Northern Plains tribe ( $n = 305$ ) and one from a Southwest tribe ( $n = 316$ ). Tribal rolls of these two populations provided the primary sampling frame for the study. Men born between 1930 and 1958 were selected from the rolls—an age range that provided coverage of over 95 percent of men eligible by age for service during the Vietnam era. Where possible, verification of veteran status was obtained from State records and tribal records. In many cases, however, veteran status was verified only after face-to-face contact and review of the veteran's discharge papers.

Location rates were in excess of 90 percent in both communities. Once located, over 90 percent of the eligible veterans agreed to participate, yielding an overall response rate of approximately 80 percent across sam-

ples. The mean age was 47.7 for the Southwest veterans and 47.0 for the Northern Plains veterans.

*Diagnostic assessment.* The CIDI was the primary diagnostic assessment instrument in AIVVP.<sup>7</sup> Although use of the CIDI represented a deviation from the NVVRS, this instrument allowed comparisons of the AIVVP data with NCS data using the then-current DSM-III-R system (Kessler et al. 1994). Prior to data collection, the CIDI was intensively reviewed by four sets of focus groups from each community. Since maintenance of comparability between these data and NCS was a high priority, we developed a conservative strategy for enhancing the cultural appropriateness of this measure.

*Procedure.* The AIVVP data were collected between 1993 and 1994. Both the NVVRS and AIVVP studies used a two-stage design (Dohrenwend 1990): (1) a lay-administered interview of a population-based sample and (2) a clinical interview of a subsample of the lay sample. The data described in this chapter derived only from the lay interview, which was designed as a comprehensive assessment of the veterans' pre-military, military, post-military, and current status. Veterans were hired as locators for the study. Once men from the sample had been located and their veteran status verified, the locators recruited them for participation in the study. The interview took between 4 and 5 hours. A more complete description of this study may be found in Beals et al. (in press).

## Results

Among the male Vietnam veterans interviewed, over 80 percent qualified for a diagnosis of alcohol abuse/dependence at some time in their lives, and over 70 percent continued to struggle with an alcohol disorder within the year prior to interview. Looking at ORs of comorbidity, table 3 indicates that those in both samples with alcohol abuse/dependence were at risk for the development of panic disorder, drug abuse/dependence, and PTSD during their lifetimes. Additionally, the Southwest veterans with alcohol disorders were at greater risk for the development of ASP, while the Northern Plains veterans with alcohol disorders were at higher risk for major depression, generalized anxiety disorder, and social phobias than were their counterparts without alcohol disorders.

Table 4 presents data on relative onsets of alcohol abuse/dependence and PTSD among the two samples of veterans. Almost 20 percent of each sample qualified for both diagnoses at some time in their lives (Southwest: 19 percent; Northern Plains: 21 percent). In this comorbid sample, over 60 percent developed PTSD during their military service. For the others, a greater percent-

<sup>7</sup>Both NVVRS and AIVVP included multiple assessments of PTSD, both in the lay and clinical interview (Kulka et al. 1991). The Beals et al. (under review) paper presents the AIVVP PTSD prevalence data in comparison to those collected under the NVVRS. For reasons beyond the scope of this chapter, in that paper we relied on the data from the SCID (Spitzer et al. 1987) to develop the PTSD prevalence estimates. The PTSD rates reported in this chapter rely on the CIDI, which proved to be a more conservative measure in these samples.

age developed PTSD post-service than before entry to the military. The development of alcohol abuse/dependence was more evenly distributed between pre-military, during the service, or post-military life periods. However, for the Northern Plains veterans, military service appeared to be a somewhat more vulnerable time for the development of alcohol disorders than were other periods.

Alcohol and PTSD disorders developed in the same life period for 45

percent of the Southwest veterans and 54 percent of the Northern Plains veterans. PTSD preceded alcohol disorders for approximately 26 percent of each sample; alcohol preceded PTSD for 29 percent of the Southwest and 18 percent of the Northern Plains veterans. Thus, in most cases the onset of PTSD was either around the same time or before that of the alcohol disorders. As we will discuss later, this result has particular salience in terms

**Table 3.** Comorbidity of Alcohol Abuse/Dependence With Other Mental Health Disorders Among Two Samples of American Indian Vietnam Veterans Qualifying for a Diagnosis of Alcohol Abuse/Dependence: Data From Community Samples.

Mental Health Disorder	Sample			
	Southwest		Northern Plains	
	Alcohol %	Relative Risk (95% CI)	Alcohol %	Relative Risk (95% CI)
<b>Mood disorders</b>				
MDD	12.8	(0.98-1.22)	13.6	(1.02-1.29)
Dysthymia	10.0	(0.89-1.19)	10.9	(0.86-1.22)
<b>Anxiety disorders</b>				
GAD	2.9	(0.83-1.33)	5.4	(1.19-1.34)
Panic disorders	7.8	(1.03-1.26)	10.6	(1.05-1.33)
Social phobias	27.1	(0.99-1.19)	39.7	(1.13-1.39)
Drug abuse/dependence	14.2	(1.01-1.23)	17.5	(1.22-1.34)
PTSD	28.9	(1.01-1.21)	30.8	(1.04-1.29)
ASP	10.2	(1.14-1.26)	7.6	(0.91-1.34)
<b>Any disorders</b>				
No other disorders	72.9	(0.84-1.01)	60.3	(0.72-0.88)
1 disorder	24.9	(0.99-1.20)	31.4	(1.07-1.32)
2 disorders	0.7	(1.13-1.24)	5.3	(1.19-1.34)
3 or more disorders	1.5	(0.62-1.46)	3.0	(1.19-1.33)

Note: CI = confidence interval; MDD = major depressive disorder; GAD = generalized anxiety disorder; PTSD = posttraumatic stress disorder; ASP = antisocial personality disorder.

of whether the VA has responsibility for the treatment of these men.

Finally, treatment utilization patterns—of both physical and emotional health services—were examined for those with no ADM disorders, any psychiatric disorder except alcohol, alcohol only, and alcohol comorbid with other ADM disorders. Individuals suffering from comorbid disorders used both physical and emotional health services more than did those with only alcohol disorders in almost every category. This was true for both physical and ADM health services, although some differentiation in help-seeking appeared between service sectors for physical and ADM problems.

Veterans used both the Indian Health Service (IHS) and VA for physical health problems and even may have favored the IHS for such problems. However, they seemed to use the VA more than IHS for ADM issues. The use of traditional healers was especially important for the Southwest veterans.

### Conclusions

The rates of alcohol abuse and dependence were very high in this special population, and there were some interesting findings regarding comorbidity. First, the rates of comorbidity were high and generally reflected patterns reported in general population studies. Second, some cultural differ-

**Table 4.** Relative Onsets of Alcohol Abuse/Dependence and Posttraumatic Stress Disorder (PTSD) Among Two Samples of American Indian Vietnam Veterans.

Sample	Period of Onset for PTSD	Period of Onset for Alcohol Abuse/Dependence			Total Comorbid PTSD per onset Period <i>n</i> (%)
		Pre-Military <i>n</i> (%)	Military <i>n</i> (%)	Post-Military <i>n</i> (%)	
Southwest	Pre-military	4 (6.8)	3 (4.9)	2 (3.2)	9 (14.9)
	Military	10 (16.1)	17 (28.1)	11 (18.2)	38 (62.4)
	Post-military	7 (11.4)	1 (1.6)	6 (9.8)	14 (22.7)
	Total comorbid alcohol per onset period	21 (34.3)	21 (34.6)	19 (31.2)	<i>N</i> = 61
Northern Plains	Pre-military	4 (5.8)	2 (2.9)	2 (3.0)	8 (11.7)
	Military	5 (8.0)	25 (38.2)	13 (21.4)	43 (67.5)
	Post-military	2 (2.7)	5 (7.7)	7 (10.3)	14 (20.8)
	Total comorbid alcohol per onset period	11 (16.5)	32 (48.9)	22 (34.7)	<i>N</i> = 65

ences of note were found. Alcohol disorders were more likely to be associated with ASP in the Southwest sample but with major depression, generalized anxiety disorder, and social phobias in the Northern Plains. Perhaps these differences can be explained by the relative normative considerations in the two communities. In this particular Southwest community, behaviors such as those assessed in ASP measures would be considered quite deviant, while in the Northern Plains community being depressed and socially phobic might be considered more deviant than antisocial sorts of behaviors.

Also interesting are the relative onsets of PTSD and alcohol problems in this study. In early discussions with VA officials, it was generally acknowledged that American Indian Vietnam veterans might have greater rates of PTSD but that these could probably be ascribed to traumas experienced as a result of excessive drinking—and thus not necessarily within the VA's purview. Finding that in most cases PTSD is concurrent with or precedes alcohol disorders potentially has considerable service implications. Finally, comorbid disorders are related to treatment in this study, with those having comorbid disorders more likely to seek services.

## DISCUSSION

### SUMMARY OF FINDINGS

The results presented here suggest that American Indians who suffer from alcohol disorders may be at

greater risk for other DSM-defined mental disorders. To date, most epidemiologic efforts among American Indians have not had the power, methods, or research orientations to examine comorbidity adequately. For instance, the early work by Shore and Kinzie (Shore et al. 1973; Kinzie et al. 1992) reported high prevalence rates of DSM-II, DSM-III, and DSM-III-R alcohol problems. However, they had neither a sufficient number of respondents ( $N \approx 100$ ) nor adequate methods to examine comorbidity effectively. The more recent work of Robin, Goldman, and colleagues is impressive in its ability to examine the genetic underpinnings of alcohol abuse/dependence. However, the family linkage design necessitated by their particular research goals precludes strong conclusions about population-based prevalence rates (Goldman et al. 1997; Robin et al. 1997*a*, 1997*b*; Long et al. 1998; Robin et al. 1998). Thus, the data presented here represent the next step in examining the comorbidity between alcohol and other psychiatric disorders among American Indians.

In the Adolescent Treatment Project, adolescents in treatment for AOD abuse (mostly alcohol) had high rates of comorbidity, with over 60 percent of the youth having at least one serious comorbid mental health disorder. It is striking that while more than half of the adolescent clinical sample demonstrated significant psychiatric comorbidity, only 20 percent of the sample received any adjunctive mental health treatment. Furthermore, the data presented here suggest that, in at

least this adolescent AOD abuse treatment facility, significant psychiatric comorbidity did not contribute to triaging those in greatest need for ancillary mental health treatment. This raises the following questions: How are decisions about who should be selected for adjunctive mental health treatment made in such settings? Are the treatment outcomes for those in alcohol treatment different from those with and without comorbid mental health disorders? This study is a first step in answering these questions, but it also highlights the fact that we know very little about such issues in regard to American Indian patients—adolescents or adults.

In the Adolescent Community Project, those with alcohol disorders were more likely to qualify for a diagnosis of a disruptive behavior disorder than were those without alcohol abuse/dependence. They were also more likely to report this particular comorbidity than were mostly white adolescents interviewed in Oregon (Lewinsohn et al. 1993). As with the Adolescent Treatment Project, the relationship between diagnosis and mental health treatment was tenuous at best. In the Adolescent Community Project, we have an additional important piece of information about the comorbidity-treatment relationship. At least one important adult in these adolescents' lives recognized the need for services. Why services were not obtained is clearly one of the next questions to be investigated. Furthermore, completion of a population-based study of comorbidity among children and adolescents should be a high priority.

The third study presented was from a select sample of adults: male Vietnam veterans. More than 30 percent of those with serious alcohol problems also qualified for another ADM disorder. Among these veterans, the most prevalent comorbid conditions were PTSD and panic disorder. Preliminary data about treatment services show that those with comorbid disorders appeared to be high utilizers of both physical and ADM health services. We also saw some differentiation in help-seeking between service sectors for physical and ADM problems. These veterans used both the IHS and VA for physical health problems, and even may have favored the IHS for such problems. However, they seemed to use the VA more than IHS for ADM issues. Use of traditional healers appeared to be especially important for the Southwest veterans.

### LIMITATIONS

Each of the three studies presented in this chapter has limitations that must be pointed out, especially in terms of conceptualization and operationalization of comorbidity and of narrowness of the samples. Here we return to the criteria suggested by Wittchen (1996) and discussed earlier in the chapter: Are the diagnoses well defined? What levels of disorders are discussed? What is the time window? What are the assessment methods? How is the study designed and how are the data analyzed?

The Adolescent Treatment Project was not able to use standardized assessment instruments and, therefore, the diagnoses were only approximated. Furthermore, the sample was



restricted to only one treatment setting. On the other hand, this study is the first of its kind in terms of the assessment of Indian youth in a treatment setting. Also, the authors are clear about the limitations of their assessment methods and attempt to make the appropriate inferences. Research continues in this setting. Additional funding has allowed the use of standardized instrumentation; thus, future publications will address the assessment concerns.

We are also pursuing opportunities to work in additional Indian adolescent treatment settings, because such work is critical. This belief is buttressed by the findings in the general population that the treatment course is better for those with comorbid alcohol and specific mental disorders when both problems are treated. This is especially true when the mental disorders precede the onset of the addiction or remain clinically significant after treatment. Often in Native communities, comorbid disorders are ignored in treatment settings, fueled by a belief that alcohol is the major, if not the only, contributor to personal distress.

The Adolescent Community Project did use a standardized instrument; however, the sample is idiosyncratic and population inferences are problematic. Comparison samples are also hard to find, given the delays for fielding the national child/adolescent epidemiology study. The Lewinsohn et al. (1993) study used the K-SADS rather than the DISC. We have recently completed collecting data in two communities on the levels of DSM-defined problems among Native

youth. Somewhat in contrast to efforts in the general population, many researchers interested in American Indian populations believe that child/adolescent work comparable to that with adults is essential. We hope to conduct a large-scale epidemiologic study of American Indian children and youth in the coming decade.

Finally, AIVVP rectified some of the weaknesses of the Adolescent Treatment Project and the Adolescent Community Project. With the AIVVP data we are able to be clear about what was being measured and about the levels of disorder and time frame; the assessment methods were standard (but also culturally adapted); and the design and analysis strategies were developed with the stated goal of allowing comparisons to current landmark studies. Perhaps AIVVP's greatest limitation is in terms of the select nature of its sample.

AIVVP served as a springboard for the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPPF), which has recently completed data collection. This large epidemiologic/services study, funded by NIMH, interviewed more than 3,000 adolescents and adults (ages 15-54) in two large, reservation-based tribes in the United States. It was designed to allow comparisons between these samples and those interviewed in the NCS and other national and international efforts. Publications from this effort should start appearing in the literature in 2001-02 and will, for the first time, allow a relatively comprehensive

examination of comorbidity among samples of Native peoples.

Another limitation of the three studies presented here is that they are predominantly of a quantitative and clinical nature. Although not specifically described, advancements in our thinking about the integration of quantitative and qualitative methodologies occurred during these efforts and will continue. The Adolescent Treatment Project was limited to a chart review and semistructured interviews with the treating clinicians. In the Adolescent Community Project, while the then-current version of the DISC was used without adaptation, clinicians with extensive experience working with Indian adolescents observed the interviews and made comments about cultural and clinical validity. Prior to the AIVVP data collection, all the instrumentation, including the CIDI, was extensively reviewed by focus groups for cultural appropriateness, and modifications were made. For example, the word "spirit" evoked a specter of witchcraft in one community and was replaced throughout the instrument. (For more detail, see the final report for AIVVP [NCPTSD and NCAIANMHR 1996]) Additionally, clinical reinterviews using the SCID were completed with approximately one-third of the veterans, thus allowing an examination of differential diagnosis between respondent- and interviewer-based diagnostic instruments. Finally, extensive ethnographic work was completed in both communities in tandem with the quantitative approaches, thus allowing a deeper and more intimate

understanding of the impact of the Vietnam War, alcohol, and trauma on these men's lives.

This ethnographic work for the AIVVP both stands alone (O'Neill 1992; Manson et al. 1996) and informs the quantitative work in meaningful ways (Beals et al. under review; NCPTSD and NCAIANMHR 1996). For instance, it was with this work that we gained a greater understanding of the place alcohol has in these men's lives as a means of coping with experiences related to war. Often veterans feel prohibited from discussions of the traumas and atrocities they experienced and/or took part in; however, when drinking, such conversations are acceptable. Therefore, for many men, attempts at integration of their war experiences with their current lives take place only while drinking—and typically only with other veterans. No diagnostic interview can provide this type of information.

Thus, in these three projects, a progression can be seen in the increasing integration of cultural considerations as well as in understanding what the various diagnostic instruments measure. We continue this integrative approach in our current work and see these methods as essential to a fuller understanding of the impact of alcohol and comorbid mental health problems in the lives of Native peoples.

#### **FUTURE DIRECTIONS FOR RESEARCH**

Research to date on the extent and impact of comorbid alcohol and mental disorders among American Indian populations is in its infancy. However,

NCAIANMHR researchers and others (most notably from the intramural research program at NIAAA that includes Goldman, Robin, and colleagues) are making considerable strides in this area, and the next decade promises to address the relative paucity of knowledge on such comorbid patterns of distress. Research is needed in three areas: prevalence of comorbidity, primary versus secondary nature of comorbid ADM disorders vis-à-vis alcohol abuse/dependence, and implications of comorbidity for service utilization and treatment outcomes in this special population. In addition, researchers need to be aware of the importance of comprehensive, interdisciplinary, culturally sensitive approaches to the understanding of comorbidity.

### Prevalence of Comorbidity

The evidence presented here argues that, among American Indian populations, significant comorbidity exists and involves many of the same mental disorders as reported in the general population. SUPERPPF represents a significant advance in our ability to place population-based data on American Indians in the context of a national study (NCS). These data, along with the work of Goldman, Robin, and colleagues, will provide an in-depth analysis of the impact of alcohol problems and comorbidity on the lives of Native peoples. Much remains to be done, however. Two high priorities are to extend the epidemiologic work to children and adolescents and to additional, culturally diverse adult and youth samples.

SUPERPPF will provide some data on older adolescents (ages 15 years and older), but alcohol use typically is already problematic among these youth. A child/adolescent epidemiologic effort is sorely needed. Ideally, this should be a longitudinal study in order to understand the development of individual and comorbid disorders.

To date, epidemiologic efforts are limited culturally and are typically confined to reservation-based samples. In both our work and that of Robin, Goldman, and colleagues, persons living off-reservation but nearby have been included in the samples. However, no efforts have been completed with strictly urban/suburban samples. This deficit is particularly striking when one considers that over half of the U.S. American Indian population lives in such settings (U.S. Department of Commerce 1991). Little is known about the mental health problems, broadly defined, of this segment of the Native population. It is quite possible that American Indians living in urban settings may show different comorbidity patterns than those living in the rural reservation-based samples included in SUPERPPF. Thus work with urban samples should be a priority.

There are more than 500 Federally recognized tribes. Our work entails collaboration with two of the larger tribes in order to have sufficient power for statistical analyses. Although these are large tribes, even optimistically we are able to make inferences to only 15 percent of the American Indian population. It is entirely conceivable that these subcultural groups will vary not only in their

drinking patterns but also in terms of comorbidity (May 1989). No comparable adult work has been conducted with tribes in the eastern part of the country or Alaska. Thus comparable work should be completed with additional, culturally diverse samples.

### Primary Versus Secondary Nature of Comorbid ADM Disorders

From the examination of relative onset of alcohol abuse/dependence and PTSD in the veterans study data, it appears that these disorders became manifest for most of this sample at about the same time in the veterans' lives. With only a minority of the men did alcohol disorders precede PTSD. These findings are similar to those reported for other populations of veterans (Bremner et al. 1996). This is an important conclusion. Given the salience of alcohol abuse/dependence in American Indian populations, some in the VA have assumed that the high rates of PTSD found among Native veterans might be due to traumas involving alcohol experience *prior* to military service, thus lessening the connection between military services and PTSD and, in turn, the VA's responsibility to provide treatment. Developing a better sense of the natural history of alcohol abuse/dependence and other ADM disorders in American Indian populations is an important next step to understanding the role of alcohol among Indian peoples and should aid both prevention and treatment efforts (Kessler et al. 1994). Of particular interest may be the exploration of a possible dynamic relationship between exposure to traumas, PTSD, and alcohol problems.

### Implications of Comorbidity for Service Utilization and Treatment Outcomes

Examinations of comorbidity should continue in service settings, as exemplified by the Adolescent Treatment Project. It appears that American Indians with comorbid conditions are more likely to seek services, both in the physical and ADM health sectors. The importance of considering traditional healing as a part of the service delivery system is also underscored by the AIVVP data. That the VA was a more likely source of ADM care for these veterans is intriguing, especially in light of the fact that no VA facilities were near these two reservation communities. Why were veterans more likely to travel to VA facilities off-reservation rather than use the nearby IHS facilities? What were the relative barriers to care in the IHS and VA systems for these veterans? We are working to explore such questions (Gurley et al. 2001).

The service systems available to American Indian populations, especially those living on or near reservations, are unique in the United States today. Of particular interest in this context is the administrative division between alcohol and mental health services within IHS (and within many tribes), where more resources are dedicated to the former than to the latter (Nelson et al. 1992). Anecdotal evidence suggests that greater stigma is attached to mental health treatment than to alcohol treatment, as typified by the statement: "It's better to be drunk than crazy" (Red Shirt, per-

sonal communication [discussion of reasons for veterans preferring specific types of treatment facilities], 1993). How do those with comorbid conditions decide among the service sectors from which to seek care? How does this differ from those with only alcohol disorders or only mental health disorders? What are the perceived barriers for receiving care from these service sectors?

Service provision for Native peoples promises to change dramatically in coming years. With the current IHS initiatives of "contracting" and "compacting," several larger tribes are choosing to provide their own health care with monies excised from IHS funds. What will this mean in terms of service provision—not only for these tribally managed programs, but also for those remaining under the IHS service umbrella?

### **Importance of Interdisciplinary, Culturally Sensitive Approaches to the Understanding of Comorbidity**

Most, if not all, research on alcohol and mental health comorbidity should be guided by an interdisciplinary and culturally sensitive approach. While such approaches are useful in many contexts, this is especially true in alcohol research with Indian communities. The stereotypes of Indian drinking are pervasive and powerful. Studies that uncritically report high prevalence of alcohol disorders only serve to reinforce these stereotypes. Comorbidity research offers a unique opportunity to better understand the

role of alcohol in the lives of some American Indians.

Comorbidity presents the uncomfortable possibility of committing a "category fallacy times two" (Kleinman 1977, cited in O'Neil 1993, p. 461). In other words, we may be imposing culturally invalid categories of human distress not just once but twice. On the other hand, such research also provides an opportunity to bring to the fore categorization and measurement issues. Maser and Cloninger (1990) wrote in their discussion of the comorbidity between depressive and anxiety disorders:

Psychiatric comorbidity raises many fundamental questions about psychopathology and emerges as a test of our classification systems. Are psychiatric disorders truly discrete and independent disease entities? What does the co-occurrence of anxiety and depressive features imply about the discriminant validity of current diagnostic criteria, and about course of illness, and family aggregation? How do genetic and environmental factors interact in the development of anxiety and mood disorders? How does comorbidity influence the choice of treatment? (p. 4)

Such questions are best answered by interdisciplinary approaches to research. For example, ethnographic methods can provide local idioms of distress and personal narratives of those with alcohol problems or what we describe as mental health prob-

lems. Measurement specialists can use this information both to develop new measures and to assess the validity of standard measures. Diagnosticians can use both ethnographic and quantitative data to refine existing diagnostic classification systems, or perhaps to develop new, utilitarian, and cross-culturally valid systems. Etiologic specialists (including pathophysiologists and genetic researchers) can search for the social, cultural, and biological predictors of specific types of problems. Service providers and policymakers will then have better information on which to base their decisions. Ideally, the interactions between these disciplines will be dynamic rather than linear. By capitalizing on each discipline's strengths and experience, our understanding of comorbidity will enrich the comprehension of these life problems.

## CONCLUSIONS

Comorbidity is a complicated and somewhat enigmatic phenomenon. However, given the fact that individuals comorbid for alcohol and other ADM disorders appear more likely to seek services and—once in treatment—may have differential outcomes, comorbidity is worthy of considerable attention. In these efforts, greater emphasis should be placed on five concerns: what is measured, the levels of disorder discussed, time frames, assessment methods, and research design and analytic strategies (Wittchen 1996). Standardized assessment techniques conforming to explicit models of disorder should be encouraged. Investigators must be

more specific about the implications of the time frames for which these assessments are made (lifetime vs. current and, if current, the specific time frame used). More attention should be focused on the importance and implications of various sample designs. Design and measurement methods must be refined to understand better the relative onset of disorders. Only when comorbidity research design becomes more rigorous can we begin to understand the natural history of alcohol problems in the context of other ADM disorders.

In this chapter we have summarized the next steps toward understanding the prevalence and importance of comorbidity of alcohol disorders with other ADM disorders in American Indian communities. Yet many questions remain, and they become even more pressing when one considers the potential impact of the current move within Native communities to assume responsibility for their own health care. We now have a unique window of opportunity to have a positive impact on service provision in Indian communities.

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## Chapter 15

# Alcohol-Related Motor Vehicle Fatalities on and Around the New Mexico Portion of the Navajo Indian Reservation: A Baseline Study of the Pattern 1982-86

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*KEY WORDS: Native American; AODR (alcohol or other drug [AOD] related) accident mortality; New Mexico; BAC; pedestrian accident; cultural patterns of AOD use; prevalence; ethnic differences; population study; literature review*

There is a dearth of concrete evidence in print to document the true extent and nature of alcohol involvement in motor vehicle crashes involving American Indians (May 1989*b*). This is in spite of the fact that accidents have been a leading cause of death in most Indian communities for many decades (Centers for Disease Control and Prevention (CDC) 1989; Olson et al. 1990; Indian Health Service 1991; May 1994, 1996), and they account for more years of potential life lost

and life expectancy reduction than among other populations in the United States (Carr and Lee 1978; Mahoney et al. 1989; Baris and Pineault 1990). (The terms "accidents," "crashes," and "injuries" are used in this chapter to denote similar incidents, because some of the studies quoted here are older and study all types of injury. The reader should not interpret the occasional use of the term "accident" as an implication that injuries are not preventable.) The few

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studies done on alcohol involvement in American Indian accidents have not always used adequate data; most of these studies have had small samples and poor data sources, and they have focused on *all* accidents or unintentional injuries rather than only motor vehicle crashes.

In this chapter we begin by reviewing the literature on Indians and accidental death, and the role of alcohol in these deaths. We then examine the fatal motor vehicle crashes (including pedestrian deaths) that occurred on and around the New Mexico side of the Navajo Reservation for the years 1982-86. Findings are discussed with reference to a model of Indian drinking styles. Finally, future research needs are discussed.

### THE INDIAN-SPECIFIC LITERATURE

Schmitt and colleagues (1966), using British Columbia hospital insurance data, observed that 28 percent of the 300 accidental Native driving and transport deaths in their study were alcohol related. They concluded that alcohol intoxication was an important factor in these deaths. Boyd and colleagues (1968) found that 12 percent of all motor vehicle deaths and drownings in Alaska were alcohol related. Wills (1969), conducting psychological autopsies of male South Dakota Sioux drivers killed in car crashes, found that many had alcohol-related arrest records; Wills attributed both behaviors to an "adjustment" syndrome. Brown and colleagues (1970) studied all types of accidents,

using clinic records to examine both morbidity and mortality among the Navajo. Motor vehicle injury deaths accounted for 48 percent of Navajo accident mortality and 19.3 percent of the injuries in the late 1960s. Factors found to be related to motor vehicle crashes were unlicensed drivers, alcohol use, lack of driver education, lax enforcement of laws, and poor roads. Omran and Laughlin (1972) reported that of 10 motor vehicle crash deaths studied among the Navajo, 5 were alcohol related. Among the Papago, Hackenberg and Gallagher (1972) and Stull (1973, 1977) linked alcohol consumption to modernization and acculturation stress and argued that these, in turn, combine to increase injury rates.

All of these studies are likely to have underestimated the role of alcohol in motor vehicle crashes. The sources of data in these studies were police reports, hospital and clinic records, and death records, which, especially in the 1960s and 1970s, seldom accurately reflected the true magnitude of the problem (Zlyman and Bacon 1968).

Several Canadian studies have examined alcohol-crash phenomena. In an intensive autopsy study of sudden deaths in British Columbia, 43 of the subjects were Indians (Cutler and Morrison 1971). Of these accidents, suicides, and homicides, 54.8 percent of the victims had blood alcohol levels over the legal intoxication limit (0.08) in Canada. The authors concluded that the high rate of Indian sudden deaths is primarily the result of occasional, intense intoxication in high-



risk situations. In another study of sudden deaths, the Kenora (Ontario) Social Planning Council (1973) found that alcohol was a factor in more than 70 percent of nearly 200 sudden Indian deaths, including 50 percent of the victims of homicide. In Manitoba, Trott and colleagues (1981) found sudden death to be more common among Canadian Natives than other ethnic groups. They also reported that 52.5 to 54.3 percent of the accident deaths were related to alcohol or other drugs, but these later data include many non-Indians as well. Jarvis and Boldt (1982) studied the deaths of Indians in Alberta Province and found alcohol to be involved in 70.6 percent of motor vehicle crash deaths, as reported by informants immediately following a death.

Guerin (1991), using autopsy data to examine blood alcohol concentration (BAC) from 253 crash deaths in New Mexico, found that American Indian and Hispanic crash victims had substantially higher blood alcohol levels than Anglos (non-Hispanic people of European heritage), although the average BAC for each of the three groups was well above the legal limit in New Mexico at that time (0.10). (In this chapter BAC is expressed as a percentage representing the number of grams of alcohol in each 100 mL of blood. Therefore, 100 mg of alcohol in 100 mL of blood is expressed as 0.10 percent.)

Mahoney (1991) examined motor vehicle-related deaths for Indians in New York State (excluding New York City) between 1980 and 1986. Motor vehicle collisions with pedestrians

were found to be the most frequent type of death (28.1 percent). For those victims for whom BAC levels were available, 77 percent tested positive for alcohol. Most of these victims had alcohol levels well in excess of the legal intoxication limit of 0.10.

Gallaher and colleagues (1992), focusing on pedestrian deaths among Indians, reported that 91 percent of all Indian pedestrian and hypothermia deaths in New Mexico involved alcohol and that the median BAC for pedestrians was 0.24. Campos-Outcalt and colleagues (1997), examining motor vehicle crashes in Arizona, found that alcohol-related fatalities accounted for a large percentage of excess mortality for Indians, as did pedestrian fatalities in general. Of those pedestrian fatalities that were BAC tested, 88.6 percent had alcohol levels greater than 0.10, compared with 42.5 percent of other pedestrians. But, like many of the other studies cited in this section, the percent BAC tested is unknown and may have been highly selective, biasing the findings.

Katz and May (1979), in a multivariate epidemiologic study of police records among the Navajo, found alcohol to be one of several significant factors in the high rate of motor vehicle fatalities on and around the reservation. Major factors elevating the high crash death rate included remote rural location, prohibition of alcohol, the style of drinking practiced by some Navajo drinkers, customs of vehicle use, the relative youth of the tribal population, and a subpopulation of high-risk individuals who frequently caused single-vehicle fatalities.

The alcohol-related crashes in this study varied from 41 to 46 percent of Navajo crashes, but the true magnitude of alcohol involvement was not available because the study had to depend on police reports (Katz and May 1979).

### **A STUDY OF MOTOR VEHICLE FATALITIES IN NEW MEXICO 1982-86**

This study began as a replication and enhancement of the Katz and May study. The major goal was to put all of the studies described in the previous section into a larger perspective of motor vehicle crashes in general, and to undertake a much more intensive examination of the relationship between alcohol and motor vehicle fatalities among the Navajo. By examining Navajo and non-Navajo fatal automobile crashes and their victims within the same geographic area, it was hoped that any differences between the two groups would provide insight into the different nature of crash characteristics and etiology. This study was also an attempt to establish better data and methods of inquiry into the problem of alcohol and fatal crashes.

The Navajo Nation is the largest highly traditional tribal group in North America. There are over 230,000 members. Over 150,000 Navajos live on and adjacent to the main Navajo reservation in parts of northwestern New Mexico, northeastern Arizona, and southeastern Utah. The land area of this reservation is by far the largest of any reservation in the

United States. It is approximately the size of the State of West Virginia. Many roads within the interior of the reservation are not paved, but all major connecting roads are now paved and a limited number of the more heavily traveled stretches and intersections connecting with non-Indian bordertowns are four-lane, divided highways, with limited-access intersections. This is substantially different from the situation in the 1960s and 1970s, when earlier studies were done; then, there were fewer paved roads, and all were of the simplest two-lane variety. As changes in motor vehicle patterns were occurring among the Navajo in the 1970s and 1980s, this study was an attempt to provide a detailed, time-bound, comparative "snapshot" of the problem that would serve as a baseline for future understanding.

### **METHODS**

In this study we analyzed secondary data for the period 1982-86. Most of the data came from the Fatal Accident Reporting System (FARS) of the U.S. Department of Transportation (1988; the data can be downloaded or ordered from the Web site [www.ntis.gov](http://www.ntis.gov)). Since FARS does not record ethnicity, other sources were accessed and matched, case by case, to expand the data set. A listing of all traffic fatalities was obtained from the New Mexico Traffic Safety Bureau (TSB), and the FARS cases were matched with the TSB cases. This matching resulted in a list that included victims' names. The Office of the Medical Investigator (OMI) of New Mexico then allowed

us to match this list to their records to obtain the victims' ethnicity, verification of BAC, and drug testing results (if available). If the BAC data in FARS and the OMI system did not match, then the OMI data on BAC were used. The agreement was, however, very close. Most differences could be attributed to missing elements in the FARS data set or to rounding error (FARS only reports BAC to hundredths).

Data were analyzed for all major roads on or close to the New Mexico portion of the reservation. Interstate 40 west of Grants and New Mexico roads 32 and 53 form the southern border of the study. The northern border is U.S. Route 550 east and south to New Mexico 44, south to Cuba, New Mexico. The Arizona border is the western boundary of this study. These roads, and the roads bounded by them, constitute the connecting routes leading to the reservation from the major bordertowns and all of the reservation roads. The study was limited to the New Mexico side of the reservation because of the advantage of combining the two data sets—OMI and FARS original data—which were not available in similar form in Arizona.

Individual BAC data were used to improve on previous studies. Of the 470 fatalities, 72 (15.3 percent) of the cases had no BAC data. In 45 of those 72 cases (62.5 percent), the victim was not autopsied, so the data were simply unavailable. Of those victims autopsied, 5.7 percent were not tested for BAC, usually because the victim was an infant or small child.

An important constraint affecting the design of most research studies of motor vehicle crashes is the lack of a true control group with which crash cases can be compared. A study can provide information about the characteristics of those involved in motor vehicle crashes, but we generally know little or nothing about persons traveling in motor vehicles who are not involved in crash events. Therefore, because this study examines only fatalities, it is not representative of all drivers. The comparison of Navajo and non-Navajo victims dying within the same geographic area is intended as the most practical comparison group to elicit modal crash characteristics of these different cultural groups.

The geographic scope of this study also imposes constraints on generalizability. By design, the study area consists of a population that is largely Navajo (66 percent in one study county and 33 percent in the other). Therefore, a larger number and percentage of the fatalities are likely to be Navajo. Furthermore, the non-Navajo groups represent at least three special subpopulations of non-Navajo: those who live adjacent to the reservation, those who work there in a variety of jobs, and tourists. It would, therefore, be inappropriate to make implicit or explicit comparisons of the findings of this study to other ethnic groups who were not living and driving in similar rural, reservation, or border areas in the Western United States. The data and findings do, however, have implications for other Western reservations and border areas.

## RESULTS

Navajos and non-Navajos differed by type of crash (table 1). Pedestrian incidents caused the largest percentage (39 percent) of Navajo deaths, while multiple vehicle crashes caused the highest percentage (51 percent) of non-Navajo deaths.

As can be seen in table 2, the differences between Navajo and non-Navajo for BAC levels are highly significant. The majority of the cases for the Navajo (52.5 percent) fall into BAC categories greater than 0.20, while the majority of the non-Navajo cases (65.9 percent) fall into the "no alcohol detected" category.

Collapsing these categories in table 3 shows that 73.4 percent of the Navajo cases were legally intoxicated as defined by law in the State of New Mexico (BAC  $\geq$  0.10) at the time of the study data, compared with 21.5 percent of the non-Navajo sample. In comparison, between 1982 and 1986 the average percentage of alcohol-involved fatal crashes for the entire State of New Mexico was 60 percent (New Mexico Highway and Transportation Department 1987).

Since the difference between groups for alcohol-relatedness in fatal crashes was so significant (see tables 2 and 3), additional analyses were

**Table 1.** Navajo and Non-Navajo Fatalities by Type of Crash, New Mexico Navajo Reservation 1982-86.

Type of Crash	Navajo	Non-Navajo
Single vehicle	101 (31.9%)	55 (36.7%)
Multiple vehicle	93 (29.3%)	77 (51.3%)
Pedestrian	123 (38.8%)	18 (12.0%)

**Table 2.** Blood Alcohol Concentration (BAC) of Navajo and Non-Navajo Crash Victims, New Mexico Navajo Reservation 1982-86.

Mean BAC	Navajo <i>n</i> (%)	Non-Navajo <i>n</i> (%)
No alcohol detected	45 (17.1)	89 (65.9)
BAC < 0.05	13 (4.9)	12 (8.9)
BAC 0.05-0.099	12 (4.6)	5 (3.7)
BAC 0.10-0.14	20 (7.6)	4 (3.0)
BAC 0.15-0.19	35 (13.3)	8 (5.9)
BAC 0.20-0.24	33 (12.6)	10 (7.4)
BAC > 0.24	105 (39.9)	7 (5.2)

Note:  $\chi^2 = 113.63$ ; *df* = 6; *p* = 0.0001.

undertaken of the data for persons involved in alcohol-related motor vehicle accidents.

Table 4 shows the mean BAC for Navajo and non-Navajo crash victims by year. The Navajo mean BACs are significantly higher than those of the non-Navajo. All of the Navajo mean BACs are almost double the legal limit, while most of the non-Navajo means are below the level of legal intoxication (0.10) and even below what medical literature considers "impaired" (0.05) in 3 of the 5 years.

Mean BACs were calculated for the different roles in fatal crashes (table 5). For drivers, the difference between

mean BAC for Navajo and non-Navajo was significant for each year except 1983. For passengers, the difference was significant for all years. For pedestrians, the difference was significant in 1982, 1984, and 1986, as well as overall (1982-86). However, there is a great difference in numbers between Navajo and non-Navajo pedestrians. Whereas there were 107 Navajo pedestrians killed in this 5-year period, there were only 15 non-Navajo pedestrians killed. It is not surprising, however, that few non-Navajo would be on foot in the geographic region studied except in the bordertowns of Gallup, Farmington,

Table 3. Alcohol Involvement by Ethnicity, New Mexico Navajo Reservation 1982-86.

Alcohol Level	Navajo <i>n</i> (%)	Non-Navajo <i>n</i> (%)
Legally intoxicated (BAC $\geq$ 0.10)	193 (73.4)	29 (21.5)
Alcohol involved (BAC < 0.10)	25 (9.5)	17 (12.6)
No alcohol involved	45 (17.1)	89 (65.9)

Note: BAC = blood alcohol concentration;  $\chi^2 = 107.03$ ;  $df = 2$ ;  $p = 0.0001$ .

Table 4. Mean Blood Alcohol Concentration (BAC) by Ethnicity and Year, New Mexico Navajo Reservation 1982-86.

Year	Navajo Mean BAC ( <i>n</i> )	Non-Navajo Mean BAC ( <i>n</i> )	<i>t</i>	<i>p</i>
1982	0.181 (55)	0.044 (36)	5.43	0.0001
1983	0.196 (62)	0.080 (25)	3.93	0.0002
1984	0.212 (57)	0.054 (27)	6.74	0.0001
1985	0.216 (48)	0.046 (17)	6.03	0.0001
1986	0.124 (41)	0.030 (30)	4.35	0.0001
Total 1982-86	0.189 (263)	0.050 (135)	11.16	0.0001

**Table 5.** Mean Blood Alcohol Concentration (BAC) by Ethnicity, Crash Role, and Year, New Mexico Navajo Reservation 1982-86.

Crash Role and Year	Navajo Mean BAC (n)	Non-Navajo Mean BAC (n)	t	p
<b>Driver</b>				
1982	0.183 (15)	0.069 (21)	3.06	0.0049
1983	0.141 (18)	0.085 (17)	1.38	0.1758
1984	0.241 (9)	0.079 (18)	2.71	0.0199
1985	0.225 (19)	0.048 (11)	4.38	0.0002
1986	0.120 (14)	0.048 (13)	2.26	0.0328
Overall 1982-86	0.179 (75)	0.068 (80)	6.07	0.0001
<b>Passenger</b>				
1982	0.121 (20)	0.013 (11)	2.97	0.0059
1983	0.155 (19)	0.009 (5)	2.39	0.0261
1984	0.138 (15)	0.004 (8)	3.45	0.0024
1985	0.146 (11)	0.0 (4)	2.32	0.0372
1986	0.056 (12)	0.005 (11)	2.05	0.0535
Overall 1982-86	0.126 (77)	0.007 (39)	6.25	0.0001
<b>Pedestrian</b>				
1982	0.252 (19)	0.0 (4)	8.20	0.0001
1983	0.264 (23)	0.076 (2)	2.31	0.2210
1984	0.237 (32)	0.0 (1)	2.62	0.0136
1985	0.248 (18)	0.132 (2)	1.69	0.3063
1986	0.181 (15)	0.034 (6)	3.44	0.0044
Overall 1982-86	0.239(107)	0.041 (15)	8.85	0.0001

**Table 6.** Mean Blood Alcohol Concentration (BAC) by Year, Sex, and Ethnicity, New Mexico Navajo Reservation 1982-86.

Year	Male				Female			
	Navajo Mean BAC (n)	Non-Navajo Mean BAC (n)	t	p	Navajo Mean BAC (n)	Non-Navajo Mean BAC (n)	t	p
1982	0.180 (35)	0.070 (26)	3.64	0.0006	0.167(16)	0.028 (8)	3.23	0.0040
1983	0.194 (50)	0.115 (16)	2.41	0.0209	0.175(11)	0.104(12)	1.17	0.2554
1984	0.237 (55)	0.036 (25)	9.79	0.0001	0.115(11)	0.078 (9)	0.72	0.4826
1985	0.209 (38)	0.024 (20)	7.89	0.0001	0.200(13)	0.074 (7)	2.09	0.0572
1986	0.161 (44)	0.033 (30)	6.31	0.0001	0.059(11)	0.033(10)	0.73	0.4751
Overall 1982-86	0.199(222)	0.052(117)	12.68	0.0001	0.147(62)	0.066(46)	3.49	0.0007

or the agency or wage work communities of the reservation (e.g., Shiprock). (Agency or wage work communities offer employment opportunities for non-Navajos, but these workers would live off the reservation and therefore have less exposure to pedestrian death than Navajos who may both live and work on the reservation.) The Navajo and non-Navajo pedestrian frequency data are therefore not readily or equitably compared, except to say that the Navajo appear to be at much greater risk, even in the reservation border areas.

Of the different types of crash fatalities for the Navajo, the pedestrians had the highest average BAC (0.239), then the drivers (0.179), and finally the passengers (0.126). The Navajo passengers killed were, on average, legally intoxicated. Among the non-Navajo, only the driver mean BAC was in the impaired range (0.068); the pedestrians (0.041) and the passengers (0.007) had relatively lower BAC levels than the non-Navajo drivers and than all categories of the Navajo fatalities.

Table 6 examines the relationship between mean BAC, sex, and ethnic-

ity. The differences in mean BAC are highly significant for all years for the males, while the female differences are only significant for 1 of the 5 years studied (1982). Overall, the differences between Navajo and non-Navajo are highly significant for both males and females, but the females of the comparison groups are less different than the males of the two groups.

Another way in which Navajo and non-Navajo could be expected to differ is by age. On average, the Navajo population is a much younger population than the U.S. population. Table 7 examines the differences in both age and sex. For males, mean BACs were significantly higher in all age groups for Navajo than for non-Navajo. For females, the differences were not significant except for the age group 30-34 years, where the Navajo had a significantly higher mean BAC.

Table 8 shows BAC by crash role. Of the 103 Navajo that had a BAC greater than 0.24, over half (54.2 percent) of these were pedestrians, 37.3 percent were drivers, and 22.1 percent were passengers. The differences in

Table 7. Mean Blood Alcohol Concentration (BAC) by Age, Sex, and Ethnicity, New Mexico Navajo Reservation 1982-86.

Age (Years)	Male				Female			
	Navajo Mean BAC (n)	Non-Navajo Mean BAC (n)	t	p	Navajo Mean BAC (n)	Non-Navajo Mean BAC (n)	t	p
< 21	0.155 (35)	0.035 (18)	4.15	0.0002	0.068 (13)	0.010 (10)	1.76	0.0925
21-24	0.199 (35)	0.043 (17)	4.90	0.0001	0.128 (9)	0.089 (4)	0.61	0.5673
25-29	0.228 (27)	0.065 (19)	5.80	0.0001	0.151 (12)	0.092 (10)	1.20	0.2463
30-34	0.221 (21)	0.058 (12)	4.58	0.0001	0.216 (10)	0.0 (5)	2.87	0.0131
35+	0.206 (83)	0.052 (29)	5.80	0.0001	0.135 (14)	0.052 (11)	1.64	0.1147

crash role by BAC levels were highly significant for Navajo. Passengers had the lowest BACs and pedestrians the highest. The same analysis was done for non-Navajo, but the results were not significant. Drivers had the highest BAC levels.

## DISCUSSION

Navajo fatalities in this time period differed significantly from non-Navajo, no matter how the alcohol involvement was measured. Navajo fatalities had significantly higher

BACs, and considerably more Navajo were legally intoxicated. Although this study did not directly address causality, alcohol involvement findings need elaboration.

## ALCOHOL MEASUREMENT

The BAC data collected for a given individual can vary considerably depending on when it was collected. The body continues to metabolize alcohol slowly even after death. A BAC taken at the scene would differ from one taken at some later time (e.g., after transportation for autopsy).

Table 8. Blood Alcohol Concentration (BAC) by Crash Role, New Mexico Navajo Reservation 1982-86.

Navajo			
BAC Level	Driver <i>n</i> (%)	Passenger <i>n</i> (%)	Pedestrian <i>n</i> (%)
0	13 (17.3)	26 (33.8)	5 (4.7)
0-0.099	8 (10.7)	9 (11.7)	8 (7.5)
0.099-0.140	6 (8.0)	9 (11.7)	5 (4.7)
0.140-0.190	11 (14.7)	8 (10.4)	15 (14.0)
0.190-0.240	9 (12.0)	8 (10.4)	16 (15.0)
0.240+	28 (37.3)	17 (22.1)	58 (54.2)

Note:  $\chi^2 = 39.13$ ;  $df = 10$ ;  $p < 0.0001$ .

Non-Navajo			
BAC Level	Driver <i>n</i> (%)	Passenger <i>n</i> (%)	Pedestrian <i>n</i> (%)
0	46 (57.5)	33 (84.6)	10 (66.7)
0-0.099	10 (12.5)	5 (12.8)	2 (13.3)
0.099-0.140	3 (3.8)	1 (2.6)	0
0.140-0.190	7 (8.8)	0	1 (6.7)
0.190-0.240	8 (10.0)	0	2 (13.3)
0.240+	6 (7.5)	0	0

Note:  $\chi^2 = 15.26$ ;  $df = 10$ ;  $p = 0.123$ .



Lewis (1987) noted that individuals vary biologically in the rate of decline of the BAC, and this can also vary from occasion to occasion for an individual, depending on factors such as the amount of alcohol consumed in what time period, or whether food was consumed with the alcohol.

Because the BACs were not necessarily collected at the same time (relative to death) for all individuals, and since we do not know the amount or the timing of the last alcohol consumption, there may be some error introduced regarding the absolute differences between Navajo and non-Navajo and the level of impairment that may have contributed to their deaths. The overall trend appears to be so substantially different, however, that it is safe to conclude that Navajos in this study involved in fatal crashes consumed greater quantities of alcohol than non-Navajos. American Indians have never been found to have any major or particular alcohol metabolic deficit compared with other groups (see May 1989*a*, 1994, and 1996 for brief reviews).

#### PREVALENCE AND STYLE OF ALCOHOL USE

The prevalence of alcohol use has increased among the Navajo in the past three decades. Levy and Kunitz (1974) reported on a sample of Navajo taken in 1969. In their study 30 percent of the population reported using alcohol. By 1984, 52 percent reported using alcohol (May and Smith 1988), but this level is still below that of the general U.S. population (May 1996). Increased prevalence

of alcohol use among the Navajo is a possible explanation for this study's findings of high levels of alcohol involvement in automotive fatalities.

The highest prevalence of drinking among the Navajo is found in men ages 20-29 and 30-39 (Kunitz and Levy 1994). In addition, younger people are at higher risk of dying in a crash: motor vehicle crashes are the leading cause of death for people ages 1-34 ("Traffic death toll . . ." 1992). The Navajo population is very young, with a median age of 18.8 during the time of this study (Baris and Pineault 1990). In contrast, the U.S. population median age was more than 31 years. The increase in the number of Navajo who drink and the youthful age structure of the Navajo population are two factors that may contribute to the results of this study.

Among the Navajo and many other reservation Indians, the major problems with alcohol-related mortality, morbidity, and arrest come from particular subgroups and the mixing of alcohol with risky situations. Although many tribes, such as the Navajo, have more abstainers than the general U.S. population, among the drinkers there are a number of people who belong to abusive drinking peer clusters and practice heavy, sporadic binge drinking. These heavy drinkers make up a proportion of the Indian drinkers which is two to three times as great as that of heavy drinkers among the mainstream U.S. population (May 1989*a*). Thus, a concentration of abusive drinkers contributes to the alcohol-related problems in an Indian (in this case Navajo) community.

Such people tend to drink in a manner that mixes high blood alcohol levels with risky, rural environments; therefore, death, injury, and arrest rates are very high for Indians (Katz and May 1979). Tribal prohibition forces those Navajo who drink to travel more vehicle miles to drink, further exacerbating the problem.

Drinking style is the most plausible explanation for the differences in Navajo and non-Navajo patterns of motor vehicle death. Ferguson (1968) described two major types of drinkers among the Navajo, the recreational drinker and the anxiety drinker. Kunitz and Levy (1994) offered a similar typology with their traditional-style social drinker and the solitary drinker.

The recreational or social drinker is typically a younger Navajo male who will drink with a group of friends on various weekends, special occasions, or for social events (e.g., western dances, rodeos, and traditional social dances). Drinking serves an important social cohesion and recreational function for this type of drinker. The major difference between this and non-Indian social drinking is generally characterized by the volume, speed, and duration of drinking. The drinking in these groups is generally forced (and reinforced, by social norms), large amounts of alcohol are consumed quickly, and the drinking may continue for an extended period of time (e.g., all night or all weekend). Intoxication is encouraged. This pattern is not unlike fraternity or party drinking. In most tribes, including the Navajo, recreational drinkers predominate, especially in the younger adult age groups. Fortunately, many drinkers

"mature out" of this pattern and quit such abusive drinking (frequently all drinking) in later years (Leung et al. 1993; Kunitz and Levy 1994).

The other type of drinker, the anxiety or solitary drinker, is much different, and behavior of this type is considered unacceptable by most Indian tribes. Anxiety drinkers drink alone, regularly, and are physically and psychologically addicted to alcohol (Ferguson 1968; Kunitz and Levy 1994). They fit the definition of the chronic alcoholic. Anxiety or solitary drinkers are the minority in most Indian groups, including the Navajo.

The specific drinking styles of subgroups of the Navajo provide a framework to interpret the findings of this study. Since the recreational drinking pattern is the modal pattern among young Indians, many problems can be related to this style. Drinking rapidly in a forced, group situation can easily produce high blood alcohol levels and intoxication in a person who drinks irregularly. Except for the minority who buy from "bootleggers," prohibition laws on the Navajo Reservation generally necessitate long drives to obtain alcohol for those that drink. High rates of motor vehicle crashes may result from intoxicated persons returning home. Even though a large number of Navajo and other Indians reduce and eventually quit drinking after ages 30-35 (Levy and Kunitz 1974; May and Smith 1988), some of those who do drink may become casualties before they quit or change from the flamboyant, recreational style of consumption. As other researchers have observed, most

Indian abstainers are former drinkers (Levy and Kunitz 1974; Whittaker 1982; Weisner et al. 1984; May and Smith 1988; Leung et al. 1993). The higher mean BACs observed for many of the Navajo killed could be indicative of the recreational drinking style.

### PEDESTRIAN DEATHS

The pedestrian deaths may represent those Navajo with a different drinking style—most likely anxiety or solitary drinkers. Evidence for this belief is the fact that pedestrians in this study were significantly older than any other type of crash victim. The mean age of male pedestrian victims was 37.3 years, compared with 28.4 for single-vehicle crash victims and 28.7 for multiple-vehicle crash victims.

In the United States in 1987, almost half of the collisions resulting in a non-occupant (pedestrian or bicyclist) death involved alcohol (Fell and Nash 1989; Perrine et al. 1989). For pedestrians killed in this study population, 95.5 percent of the Navajo and 33.3 percent of the non-Navajo had a positive BAC.

According to a CDC (1988*a*) report, almost half of all fatally injured adult pedestrians in the United States in 1984 were at least legally intoxicated. For the Navajos in this study, pedestrians consistently had the highest mean BACs. Of the Navajo pedestrians killed, 87.9 percent of them were at least legally intoxicated. More than half of those pedestrians (54.2 percent) had a BAC in excess of 0.240, higher than the other types of Navajo crash victims.

The idea of a drinking "career" might tentatively explain the higher proportion of Navajo pedestrians with alcohol involvement, higher mean BAC, and some of the factors of environmental risk. Navajo pedestrian deaths probably represent the later stages of the Navajo drinking career. These unfortunate individuals no longer have a vehicle, but they are still getting around to drink. At the end of extended drinking episodes, they are heavily intoxicated and returning to their homes on the reservation. But they may get struck and killed on the way, in great numbers as shown in this study and others (see Peek et al. 1991; Gallaher et al. 1992). The pedestrian deaths are higher in this study than in the previous Navajo studies (Katz and May 1979). There appears to be more going on than just an alcohol problem. This is likely a later stage of a recreational alcoholic career, or perhaps a stage of anxiety/solitary drinking. If these individuals are not killed, they might eventually become abstainers.

The results of this study, and informal observation over the years, seem to indicate that the Navajo pedestrian victims are most frequently anxiety drinkers, since their very high BACs are indicative of high tolerance or chronic alcoholism. Also, the mean age of male pedestrian victims is 8.6 years higher than that of either single-vehicle crash victims or multiple-vehicle crash victims. Many people in this stage of drinking are without major financial assets, such as a car, and are therefore more likely to be walking or hitchhiking. Finally, anxiety drinkers

lead more solitary lives, as is typical of most of the pedestrian deaths.

It will be important to examine data from the 1990s carefully to see what effect the many improvements to highways, such as lighting and shoulders, around the bordertown of Gallup, New Mexico, have had on pedestrian fatalities.

### **BAC, INDIVIDUAL RISK, AND CRASH TYPE**

Perrine and colleagues (1989) reported that in 1986 41 percent of all BACs in fatal crashes exceeded the typical legal limit of 0.10. In this study, 73 percent of the Navajo drivers killed had a BAC that exceeded New Mexico's legal limit (at that time) of 0.10, compared with 21.5 percent of the non-Navajo. It appears likely that the higher percentages of intoxicated drivers contribute to higher rates of death for Navajos. The literature on the subject of drinking and driving is consistent in the expectation of higher rates of death with higher BACs (National Highway Traffic Safety Administration 1985; CDC 1988*b*; Perrine et al. 1989). The Navajo in this study had much higher BACs than the non-Navajo: 39.9 percent of the Navajo drivers had a BAC in excess of 0.24 versus 5.2 percent of the non-Navajo.

Fell and Nash (1989) and Perrine and colleagues (1989), looking at 1987 FARS data, found that alcohol was much more prevalent in single-vehicle than multiple-vehicle crashes, an observation that was supported in this study. Of the drivers killed on the Navajo Reservation 1982-86, 94.7

percent of Navajo drivers in single-vehicle crashes had positive BACs, compared with 66.7 percent of Navajo drivers in multiple-vehicle crashes. This was also true for the non-Navajo drivers: 55.6 percent of non-Navajo drivers in single-vehicle crashes had positive BACs, compared with 31.8 percent of non-Navajo drivers in multiple-vehicle crashes. Single-vehicle crash drivers, regardless of their ethnicity, are more likely to have used alcohol.

### **CONCLUSIONS**

In this study of a particular geographic area, Navajo fatal motor vehicle crashes differed from non-Navajo crashes. Navajos had a considerably higher percentage of single-vehicle and pedestrian crash victims than non-Navajos. Navajos also had higher mean BACs regardless of sex, age, or role in the crash (driver, passenger, or pedestrian). Navajos were more likely to be at least legally intoxicated, and in the majority of cases, well over the legal limit. The Navajo fatalities appear to come from the highest risk elements of this large Indian nation.

There are several potential explanations for the higher rates of death for the Navajo. Alcohol is certainly a factor, but very influential factors such as rurality, road characteristics, and the effect of prohibition on the reservation are not addressed specifically by these data (see May 1976, 1989*b*; May and Smith 1988). The Navajo recreational drinking style is a possible explanation for the high blood alcohol levels in the drivers and passengers

of these crashes, while the anxiety drinking style may be more related to the exceedingly high levels of alcohol involvement in the pedestrian fatalities.

A number of policy and environmental interventions have recently been undertaken to address alcohol problems on and around the Navajo reservation. Interventions such as decriminalizing public intoxication, passing seat belt laws, and establishing injury control programs may have an effect on some of the specific patterns of crash-related deaths described in this chapter (Katz and May 1979; May 1992). Data from 1987 to the present can begin to measure longer term changes and the effect of new prevention measures. Furthermore, the effects of new initiatives in alcohol sales policy (e.g., a law closing liquor store drive-up windows), normative change in particular peer groups, more vigorous law enforcement, driver and public education, more effective emergency medical services, better road engineering, and a variety of other intervention measures can be monitored. We must go beyond epidemiologic documentation of the magnitude of the crash fatality problem, to examine the specific details of the relationships among crashes, drinking behavior, and environment among Indians.

It is hoped that this study will stimulate other explanatory and etiologic investigations of the high motor vehicle crash and fatality rates among the Navajo and other Western communities. Although this study has been largely descriptive, it has begun to address causality more directly than

many of the other studies on Indian crashes. This study establishes a baseline methodology which, if replicated, can be used to monitor change and the effectiveness of preventive measures. If such research becomes a priority and is done on a timely basis, American Indians can gain new power and save lives from their own initiatives.

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## Chapter 16

# Alcohol-Related Violence Among American Indians

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*KEY WORDS: Native American; AODR (alcohol or other drug [AOD] related) violence; gender differences; cultural patterns of drinking; domestic violence; sexual offense; binge AOD use; social detachment; cultural conflict; acculturation; victimization; psychosocial cause of stress*

A study released by the U.S. Department of Justice (Greenfeld 1998) refocused media attention on the fact that alcohol use is linked to a large percentage of criminal offenses. The study found that almost 4 out of 10 violent crimes involved alcohol, according to both reports by crime victims and self-reports of attribution by criminal offenders. This report confirmed the wide body of academic literature that has documented the correlation between alcohol consumption and interpersonal violence in adults (Bushman and Cooper 1990).

A Bureau of Justice Statistics study released in 1999 found that American Indians were more likely to be victims of violent crimes than members of other ethnic groups (Greenfeld and Smith 1999). Using data gathered from 1992 to 1996 by the National Crime Victimization Survey, supplemented by Federal Bureau of Investigation homicide and Census Bureau data, American Indians' average annual rate of violent victimization was 124 per 1,000 for persons 12 years of age or older, compared with rates of

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61 for African Americans, 49 for whites, and 29 for Asian Americans. American Indians between 18 and 24 years of age experienced the highest per capita rate of violence of any ethnic group considered by age—about one violent crime for every four persons of this age. The study highlighted alcohol's link to the violent events, citing alcohol as a major factor in 46 to 70 percent of the cases. Regarding the issues of gender and ethnicity, the rate of violent crimes against American Indian women was reported to be almost 50 percent higher than the rate of violent crimes against African American men. According to the reports of the Indian victims, 60 percent of the perpetrators were white; 29 percent were "Other" race, a category that included Indians; and 10 percent were African Americans (Greenfeld and Smith 1999). Alcohol-related violence was reported among both non-Indian and Indian perpetrators. Media reactions to the report centered around the role that alcohol and racism played, "with Indians being victimized by poor, drunken whites, people on the margins hurting each other" (Sidney Harring, professor, City University of New York School of Law, quoted in Butterfield 1999).

The purpose of this chapter is multifold. In order to provide readers with a brief overview of what is known about the relationship between alcohol consumption and violence, in the first part of the chapter we summarize the extant literature investigating this relationship in the general population. A description of what is known about the relationship between

alcohol and violence in American Indian populations follows this general discussion. The final part of the chapter focuses specifically on alcohol's involvement in violence against American Indian women.

## THE ALCOHOL-VIOLENCE RELATIONSHIP

The statistical relationship observed for the general co-occurrence of alcohol and violence is well documented in the literature (Murdoch et al. 1990). The body of literature investigating this relationship generally falls within two distinct methodology types: correlational studies and experimental studies.

In correlational studies examining the prevalence of alcohol use for official offender populations, studies have found that offenders were under the influence of alcohol in 28 to 86 percent of incidents of homicide, 24 to 72 percent of assaults (Roizen 1982), and 13 to 50 percent of rapes (Roizen 1997). This wide variability in estimates, Roizen believed, may be attributable to a number of factors, including small samples and the uneven quality of data.

Another perplexing finding is that nonviolent offenders were just as likely to have been under the influence of alcohol as their violent cohorts. For example, a survey of prison inmates in the early 1970s indicated that although a large proportion of violent offenders were drinking or drunk at the time of their crime, a similar proportion of nonviolent offenders reported drinking or being

drunk when they committed their crimes (Roizen and Schneberk 1977). This general alcohol pervasiveness in offender populations was also found in the U.S. Department of Justice study mentioned at the beginning of this chapter. The mean blood alcohol concentration (BAC) levels for State prisoners, estimated for the time that the crime occurred, was approximately 0.28 for violent offenders and 0.30 for those who committed property offenses (Greenfeld 1998). These BAC level estimates were calculated from offenders' self-reports of what they were drinking and for how long they were drinking at the time the crime was committed. The fact that nonviolent offenders have similar rates of drinking in the event led Roizen (1997) to conclude that "criminal behavior may not be seriously influenced by drinking in the event, but rather that criminal offenders generally are very heavy drinkers and if there is any contribution made by alcohol, it is in this way" (p. 24). In other words, chronic alcohol abuse may be as important or more important. These findings have led others to call for more specificity when analyzing violent events (Pernanen 1991).

In perhaps the largest research undertaking of its kind to look specifically at the violence-alcohol connection, Kai Pernanen analyzed data from a community probability sample of 933 men and women and from a separate sample of 781 crime records. In more than half of the self-reported community incidents of violence and in 42 percent of the violent crimes, either the victim or the assailant was

drinking, or both were drinking. This study led Pernanen to conclude that alcohol is abundantly present in day-to-day violent confrontations (Pernanen 1991).

Another important contribution of Pernanen's work was its demonstration that alcohol was more pervasive within particular subsets of violent incidents. For example, alcohol involvement was present in over half of all episodes of male-perpetrated violence but in only 27 percent of female-perpetrated violence. Alcohol presence also varied by the victim-offender relationship; over three-quarters of the incidents involving strangers and nearly half of the incidents of spouse assault involved drinking by either the victim or the assailant. The high prevalence of alcohol involvement in intimate partner violence is confirmed by other research as well (Kantor and Straus 1987; Kantor and Asdigian 1997).

Pernanen's work encouraged others to better specify the context of the violent incident under study. For example, Martin and Bachman (1997) found that the effects of assailant drinking on the escalation (from threat to actual attack) and outcome (injury vs. no injury) of assaults also varied by gender and victim-offender relationship. After controlling for other important factors of the incident, including weapon presence and location of the incident, these authors found that alcohol had little effect either on the likelihood of a threat escalating to an attack or on it resulting in injury in assaults involving acquaintances of either sex. Alcohol

did, however, increase the likelihood that a threat would escalate to an attack in male-to-male incidents involving strangers. In addition, it was found that attacks against women by a male intimate (e.g., husband or boyfriend) were more likely to result in injury if the assailant had been drinking.

None of these correlational studies, of course, establish a causal relationship between the use of alcohol and intentional violence. Limited laboratory experimental studies raise the possibility that alcohol consumption may have a causal influence on subsequent hostile or violent behavior. A large proportion of the experimental studies investigating the relationship between alcohol ingestion and violence have measured aggression using the Taylor paradigm (Taylor 1967). Aggression is operationalized using a version of the Taylor competitive reaction time task that involves shocking a bogus opponent (measure of aggression) as well as receiving shocks from a bogus opponent (provocation). In general, these studies have found that intoxicated subjects give a greater number of, and markedly higher, shocks than sober subjects (for a review, see Bushman and Cooper 1990), particularly under conditions of frustration and provocation (Taylor and Leonard 1983). Unlike the correlational studies discussed above, these experimental studies have the advantage of permitting inferences about causation because of their random assignment to the experimental manipulation, the consumption of alcohol or a placebo beverage. However, due to the artificiality of both

the drinking situation and the operationalization of aggression, they have limited generalizability outside the laboratory setting (Lang 1993).

Although alcohol use is frequently found to precede violent events, the potential causal relationships are fairly controversial, quite complex, and at this point surprisingly little understood (Roizen 1993). Much of the work has been plagued by limitations and uncertainties in theoretical clarity and causal specificity, definitions of variables and measures, sampling frames, and control or comparison groups (Collins 1981; Leonard and Jacob 1988; Collins and Messerschmidt 1993; Martin 1993; Collins 1994; Martin and Bachman 1997). Nonetheless, there have been enormous advances in the field in the last two decades. For example, there are now distinctions between the contributions of chronic alcohol abuse and those of proximal drinking in the event (Wiley and Weisner 1995), between drunkenness as a motivator and as a post hoc rationale, and between the direct or "fixed" effects of alcohol and its culturally learned and variable effects (Room and Collins 1983). Pernaenen, in general reviews (1976, 1993) and an empirical study (1991), suggested an integrated paradigm for understanding the contribution of drinking to violence, with particular focus on both alcohol's physiological impairment of cognition of social cues and the culturally learned belief in this impairment. Collins (1988) similarly pointed to the importance of a conceptual framework inclusive of interactions

between personal, situational, and cultural characteristics.

Work on drug use and violence has also contributed to our overall understanding of the separate pharmacological, psychosocial, and socioeconomic contexts for aggression and both licit and illicit drugs (Goldstein 1985; Fagan 1990). Increasingly there is disciplinary exchange between public health research on intentional injury and criminological work on violent crime (Reiss and Roth 1993). For prevention and intervention, critical elements include both formal social controls and informal management of problem situations and conditions at familial and community levels (Martin and Howard 1993).

### **ALCOHOL, VIOLENCE, AND GENDER**

In Pernanen's study (1991), for episodes involving male perpetrators and female victims, drinking was involved in over half of the male-to-male episodes, but slightly less than half of those of male perpetrators and female victims. Fewer than a third of female perpetrators had used alcohol. Drinking was common in acquaintance and family incidents, and it was even more frequent in stranger-to-stranger incidents. Women and men reported higher levels of drinking during their most recent violent event than was their usual. That drinking was reported more often for men than women in the violent event is unsurprising, given men's greater involvement in drinking overall. Men, particularly young men, are also greatly overrepresented as per-

petrators (and to a lesser extent as victims) in the universe of violent events (Martin 1993).

The series of general population National Family Violence Surveys have found, using the Conflict Tactics Scale, an association among the men for chronic heavy drinking—although not alcoholism—and reported wife abuse (Straus 1979; Coleman and Straus 1983). In the second survey, men's drug use and both parties' drinking were associated with male partner violence, although only men's drug use was associated with severe violence (Kantor and Straus 1989). Low income and domestic violence in the woman's family of origin were also associated with both overall and severe violence. Although chronic heavy drinking was associated with wife abuse, Kantor and Straus (1987) stressed that problem drinking was not so much a straightforward cause of the abuse but rather a useful excuse (see also Gelles 1972; on drinking and rape excuses, see Scully and Marolla 1984).

In a series of studies on men's drinking and their violence with intimates, Leonard and colleagues have consistently found associations between alcohol and violence and have explored different models for the contribution of proximal and distal drinking to violence (Leonard et al. 1985; Leonard and Blane 1992; Leonard and Senchak 1992; Leonard 1993). Among other findings, the data suggest that heavy drinking indirectly leads to or exacerbates domestic violence by creating other stressors, particularly for men already at high risk for violence (Leonard and Jacob

1988). A causal connection was not found. That drinking is neither necessary nor sufficient for marital aggression has also been found by other researchers (Hamilton and Collins 1981; Hotaling and Sugarman 1986).

Looking at women's experiences of different forms of domestic and sexual violence and alcohol and other drug (AOD) abuse, Miller and colleagues have consistently found higher rates of victimization among AOD-involved than non-involved women in a variety of samples (Miller et al. 1989; Miller 1990, 1993, 1996). Although there are important interaction effects and intervening variables, there is a major association of women's drinking and other drug use with victimization. In the majority of cases, male partners also engaged in heavy drinking. Furthermore, there is mounting evidence that women frequently drink and use other drugs heavily as a means of self-medication following physical or sexual abuse, including childhood abuse or adolescent criminal victimization (Miller 1990; Kilpatrick 1993; Miller et al. 1993; Widom 1993). Other aspects of violence that may be related to female AOD abuse are the stresses of violent environments, including those involving illicit drug markets (Goldstein et al. 1989), and the stigmatization of AOD-using women that may make them targets of abuse (Miller 1990).

As part of a California-based perinatal needs assessment study ( $N = 1,147$ ), a screening threshold for problem or heavy AOD use was developed to allow for comparison between low-income pregnant women who were ( $n = 401$ ) and were not ( $n =$

746) AOD involved (Klein et al. 1994; Klein and Zahnd 1997).<sup>1</sup> The screener interviews included standardized questions about violence among the respondents' family and friends, and about violence in their neighborhoods. High levels of violence were found among the entire sample; however, the women who met the threshold of problem or heavy use responded affirmatively significantly more frequently than the comparison group (Zahnd et al. 1997). Specifically, 79 percent ( $n = 311$ ) of problem users felt that among people they knew fighting or violence was a problem when people drank versus 66 percent ( $n = 475$ ) of those not meeting the problem use threshold. In response to whether fighting or violence connected to drug use or dealing was a problem among people they knew, 81 percent of the heavy-use sample and 63 percent of the comparison group said it was. Thus, AOD-related violence among family, friends, or acquaintances appeared to be a problem for most of these low-income pregnant women; however, it was a concern significantly more often to the problem AOD users (Zahnd et al. 1997).

Using multivariate logistic regression, Zahnd and colleagues found a number of demographic and problem variables associated with perceived AOD-related violence among the

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<sup>1</sup> Analysis of the screening instrument demonstrated the utility of a revised version of the alcohol CAGE that incorporates a more recent, specific time frame for identifying pregnant, low-income women at risk for heavier or problem alcohol use, and the utility of a newly developed drug CAGE for identifying pregnant, low-income women at risk for heavier drug use (Midanik et al. 1998).

entire sample ( $N = 1,147$ ): meeting the screening threshold for heavy or problem AOD use, being born in the United States as opposed to being born in another country, being African American or Latina as opposed to being Anglo, reporting neighborhood alcohol problems, and reporting neighborhood drug problems. Among the AOD-involved sample, the regression model indicated that being a woman of color, reporting neighborhood drug problems, and affirming having been "hurt, beaten or taken advantage of due to drug use" were associated with perceived AOD-related violence. Clearly, violence related to AOD use among acquaintances occurs within a context of community AOD problems. Although all the women were low income, the women of color may live in poorer and hence more troubled areas (Zahnd et al. 1997).

With respect to sexual violence, drinking in the event by both parties has been found to accompany acquaintance or date rape in a majority of instances for a general population of college students (Koss and Dinero 1988; Koss et al. 1988; Koss and Dinero 1989). Causal relationships are not necessarily implied, particularly given weak associations in a generally heavy-drinking population. Separate research on sexual expectancies around drinking finds positive expectancies among large numbers of young women and men (Wilsnack 1974; Beckman 1979; Brown et al. 1980; Leigh 1990; Wilsnack 1991; Norris and Hughes 1996). These expectancies may be linked to motives for drinking

during social interactions and thus play a role in outcomes involving sexual violence. There are also complex attitudes toward the differing degrees of responsibility for appropriate sexual behavior, including aggression, by the drinking versus sober female or male (Richardson and Campbell 1980, 1982; Fillmore and Midanik 1984; Scully and Marolla 1984; Koss and Dinero 1989).

In any consideration of violence against women, the contribution of gender roles and relationships cannot be overemphasized (Klein 1981; Stanko 1985, 1990, 1995; Burton and Kitzinger 1998; Dobash et al. 1998). It is fairly conclusively established that the overwhelming proportion of such violence happens in interaction with males and that in most cases the aggressor is male and known to the victim (Bachman 1994; Johnson and Sacco 1995; Tjaden 1995; Tjaden and Thoennes 1996). Of serious assaults and rapes reported in a national survey (Kilpatrick et al. 1994), fewer than a fourth were committed by strangers. Younger women (i.e., under 45) are particularly at risk (Bachman 1994; Kilpatrick et al. 1994). These findings have been generated through focused studies and general surveys in recent years, overcoming the difficulties of obtaining sensitive data (Bachman and Taylor 1994).

Neither simple models of societal or personal gender domination nor explanations focused solely on heavy drinking or other drug use can adequately explain violence against women. There are also cultural differences that limit the power of these explanations. Regarding gender domi-

nation, men and women may perceive the same violent event in dissimilar ways. In-depth interviews with 122 male perpetrators and 144 women victims found the men and women providing significantly different accounts of men's violence, controlling behavior, and injuries, with the males downplaying the extent of violence compared with women (Dobash et al. 1998). Similarly, attitudinal surveys conducted in selected English cities with 2,039 youth ages 14–21 years found males' tolerance of violence against women significantly greater than females' (Burton and Kitzinger 1998).

### ALCOHOL AND VIOLENCE IN AMERICAN INDIAN POPULATIONS

Although there is a proliferation of recent research on alcohol-related violence, there are few studies that have focused exclusively on ethnic minorities, and even fewer that include American Indians (Red Horse et al. 1989). The Bureau of Justice Statistics study cited at the beginning of this chapter found that American Indians, unlike whites or African Americans, were most likely to be the victims of violent crimes committed by members of an ethnic group other than their own, and that the majority of such violent events involve alcohol (Greenfield and Smith 1999).

Other data also suggest potentially high rates of violence in American Indian communities. Homicide death rates for Indians in Indian Health Service (IHS) areas exceed that for the total

population in all age groups and for both genders. For example, the homicide rates per 100,000 females ages 15–24 in 1989–91 were 8.3 for Indians and 6.3 for all females; for females 25–34, the rates were 12.8 and 7.2; and for females 35–44, the rates were 10.1 and 4.8 (IHS 1994). Considering both violent and alcohol-related official arrest data, Silverman (1996) summarized comparative studies since World War II as generally showing disproportionate Indian rates compared with the total population. For 1990, American Indian arrests per 100,000 were 6,256.8, compared with 4,483.7 for the total population. Figures on prison inmates show that American Indian women and men are overrepresented (Lujan 1995; Hutton et al. 1996), particularly in large reservation States.

The characteristics of American Indian violence have been little studied, although the apparently strong linkage to alcohol use has been noted by virtually all observers. National data for American Indians in 1980–84 show homicides to be intrafamilial in 23 percent of the killings, between acquaintances in 60 percent of the killings, and between strangers in 17 percent (Bachman 1992). Female perpetrators are 7 percent of the total. Generally, compared with whites, Indian-perpetrated homicides are more likely to be of acquaintances, and somewhat more likely to be perpetrated by a female. (In these regards, Indian-perpetrated homicides resemble those perpetrated by African Americans.) In a survey of the larger reservations with their own judicial systems, the most common offenses



included disorderly conduct, simple assault and battery, intoxication, and driving under the influence. Tribal judges reported that most offenses "involve alcohol abuse and personal violence among families, relatives, and members of the community. Crime on Indian reservations often makes victims of people who are in continuing relationships with the perpetrators of given offenses" (Zion and Zion 1996, p. 102).

At the descriptive level, alcohol use has been associated with a high proportion of violent acts committed by American Indians, including homicide, suicide, and family violence (Kraus and Buffer 1979; Broudy and May 1983; Lex 1987; Bachman 1992). For example, record studies that have examined cases of violent offending, including homicides, find that 60 to 95 percent of all American Indian offenders were under the influence of alcohol during the commission of their crime (Stewart 1964; Bachman 1992). In addition, studies that have examined blood alcohol levels in Indian victims of homicide and suicide have found that the majority of victims had levels over the legal limit for driving (Jarvis and Boldt 1982). Based on interviews with significant others following a death, Jarvis and Boldt concluded that a vast majority of those who died violently were said to have been impaired by alcohol at the time of death; "4 out of 5 of the 52.8% of deaths not due to natural causes are in fact directly or indirectly attributable to alcohol use. When one adds to this human cost the unknown numbers of natural

deaths which were abetted by alcohol, the responsibility of alcohol in Native mortality is even greater" (p. 1349).

Of particular concern for patterns of alcohol and violence among American Indians is the role of proximal drinking to the event, particularly binge drinking. Recent research suggests that occasional binge drinking may be more socially and even physiologically harmful than frequent heavy drinking (Robin et al. 1998). This finding, if valid, has enormous implications for prevention. In numerous surveys of American Indians, modal weekly frequency of drinking is low to moderate (e.g., one to two times), while number of drinks per occasion is high (e.g., well over five) (see, e.g., Zahnd and Klein 1997). May (1996) summarized American Indian surveys as finding "a tendency toward heavy binge drinking (more than five drinks per episode) and highly adverse results from drinking" (p. 240). In an Oklahoma household survey (Smith et al. 1995), of the women reporting drinking, 26 percent of the American Indians compared with 15 percent of the women overall had drunk five or more drinks during an occasion in the past month. For men, the comparable percentages were 38 percent of the American Indians and 30 percent of all men.

Addressing the possible distal causal factors for problems of alcohol abuse and violence, some scholars have argued that such non-Indian-specific factors as marginalization, racism and poverty are key (Robbins 1979; Bynum and Paternoster 1996). Alcohol use patterns and problems are strongly, albeit complexly, correlated

epidemiologically with socioeconomic status and ethnicity (Caetano and Herd 1988; Wilsnack 1996) as well as etiologically associated with such factors as anomic and powerlessness (McClelland et al. 1972; Levinson 1983). Relative economic deprivation for entire communities is also associated with high rates of interpersonal violence (Reiss and Roth 1993), and low income is correlated with injurious domestic violence (Sorenson et al. 1996) and with inability to escape abusive marriages (Gondolf and Fisher 1988; Dobash and Dobash 1992). American Indian health and socioeconomic indicators, while improving overall, continue to lag significantly behind those of the general population, with the lag growing for some indicators (Young 1996). For example, annual mean income for American Indian individuals fell from 62 percent of whites' in 1979 to 55 percent in 1989 (Gregory et al. 1996). American Indian households, compared with all households, are considerably poorer and are more likely to be headed by a female (IHS 1994; Sandefür and Liebler 1996).

The particular form and effects of "internal colonialism" (Blauer 1972) for this population (e.g., forced reliance on government, jurisdictional disputes, dislocation) have also been cited as the key to understanding the antecedents of drinking and violence problems, such as social disorganization, culture conflict, and a particular subculture of violence (Ferguson 1968; Kilpatrick et al. 1989; Bachman 1991; Nielsen 1996). A survey of American Indian urban clinic patients in the

Southwest found that alcohol abuse was associated with high stress levels, poverty, and cultural discontinuity (e.g., language) between reservation and city life (Joe and Miller 1989). A survey of hospitalized veterans found a higher prevalence of alcohol, drug, and mental health disorders among American Indian substance-dependent patients than among non-Indian substance-dependent patients (Walker et al. 1994). Psychologists have attributed self-destructive behaviors among American Indians to posttraumatic stress disorder (PTSD) resulting from conquest (Duran et al. 1994). It should be noted that PTSD for women has been identified as a consequence of sexual and physical abuse among AOD-involved women (Kilpatrick et al. 1989; Fullilove et al. 1994), but not necessarily among all abused women (Campbell et al. 1994).

Descriptive data indicate that American Indians may be particularly vulnerable to alcohol-related violence because they are also more likely than many other minority groups to exist in conditions of isolation and economic deprivation (Bachman 1992; Mail and Johnson 1993). While there is great diversity in such things as income and employment across Indian nations, some statistical averages show that many American Indians in this country still suffer from the entire range of deleterious conditions that are present in most Third World countries. Many researchers view alcohol as an intervening factor related to violence; both alcohol and violence are the result of other sociostructural conditions such as poverty and social disorganization

(Leland 1981). Violence, alcoholism, and alcohol abuse are seen as adaptations to stress produced by these sociostructural conditions (Bachman et al. 1996). For example, in her model explaining homicide within American Indian populations, Bachman (1992) delineated the causal forces of social disorganization, economic deprivation, a culture of violence, and the psychological mechanisms of culture conflict and perceived powerlessness. Internal colonialism was delineated as the antecedent variable to each of these conditions, while AOD use was formulated as an intervening variable thought to increase the likelihood of conflicts resulting in fatal violence.

Other scholars argue that psychological factors such as the presence or absence of a strong ethnic identity are more important in predicting problems such as alcohol-related violence committed by American Indians (Green 1993). Anthropologists (Levy and Kunitz 1974) have focused on internal tribal cultural norms; they discount the persisting notion of a relationship between alcoholism, social disorganization, and anomie among American Indians and instead argue that drinking patterns are a persistent element of the culture rather than a response to acculturation and anomie (Levy and Kunitz 1971). Some research on ethnicity and alcohol problems has focused on the contributions of cultural traditionalism, which is generally seen as protective, and acculturation, which is often found to be a risk factor, albeit in conjunction with other variables (Cae-

tano 1987). Compared with immigrants, the meanings and implications of these constructs are likely to differ for American Indians.

Some warn against applying the term "acculturation" to American Indians, arguing that the term results in an "ethnic gloss" that masks the more than 450 identifiable diverse and complicated tribal units (Trimble 1996). Others note that measures of acculturation are varied and problematic, and that links between cultural identification and drinking among American Indians are difficult to disentangle (Beauvais 1998). Some have suggested developing less polarized ways of measuring the influences of traditionalism and acculturation (Joe and Miller 1989; Oetting and Beauvais 1989; Beauvais 1998) and have also suggested emphasizing socioeconomic status as a potentially major mediating variable. Some studies have found, for example (Green 1993), that higher attachment to American Indian traditions does not by itself predict lower rates of the problematic behaviors such as alcohol-related aggression.

Other studies of the psychosocial etiology of drinking problems and violence for American Indians commonly find strong intrafamilial, intergenerational, and intracommunity characteristics. Some research has shown that respondents recall learning aggressive drunken behavior from their older relatives; this learned behavior may be related to an intergenerational cycle of victimization and aggression (Conner and Conner 1992; Widom 1993). "Weekend partying" is also often intergenerational

(Weibel-Orlando 1986/87; Bachman 1992). For Indian youth, who have been found in a number of general population surveys to use AODs in general at relatively high rates compared with other adolescents (Beauvais et al. 1989; Oetting and Beauvais 1989; Beauvais 1996), family circumstances are strongly influential, in addition to peer influences (Swaim et al. 1993).

Studies of child abuse and neglect suggest that although, as for the total population, neglect is more common than physical or sexual abuse among American Indians (DeBruyn et al. 1992), sexual abuse is underreported (Lujan et al. 1989). For American Indians (as for other groups), high proportions of abuse are found to be alcohol related (Young 1993). In one case-control records study in the Southwest, of those formally identified for child abuse and neglect, more than three-fourths included alcohol-involved incidents, and similar proportions of the parents or guardians had alcohol or drug problems (DeBruyn et al. 1992). However, the researchers also reported AOD abuse problems in over half of the control group families (DeBruyn et al. 1992).

There are also physiological and psychopharmacological vulnerabilities commonly found in abusive families that are related to, and exacerbated by, heavy drinking. An example is fetal alcohol syndrome. Mothers of children with this syndrome are heavy prenatal drinkers who in most cases are themselves the children of heavy-drinking individuals (May et al. 1983; May 1991; Streissguth 1994), and the

individual and intergenerational problems are compounded by developmental disabilities that create special vulnerability to abuse (Lujan et al. 1989; DeBruyn et al. 1992; LaDue et al. 1992). Another common element is family disruption: an estimated one-fourth of all Indian children have been sent away from home at some point, to foster homes, boarding schools, or out-of-tribe adoption (Bachman 1992; Dick et al. 1993), which may compound intergenerational difficulties. Studies suggest that many children learn the use of aggression from corporal punishment in boarding schools (Feinman 1992) and that American Indian women from boarding schools have more problems raising children than other American Indian women with similar tribal backgrounds (Metcalf 1976).

It must be emphasized, however, that heavy or binge-style drinking and high rates of violence are by no means universally found in Indian country. First, studies have found sizable differences in regional and tribal drinking patterns, and tribal alcohol-related morbidity and mortality rates, which interact with gender and age effects (Christian et al. 1989). No elevated rates of alcohol-related problems have been found in some tribes in Oklahoma and the Southwest, whereas serious problems have been found among other tribes in those same areas, as well as tribes in the Northern Plains. The same Northern Plains reservations have extremely high homicide rates, while many southwestern pueblos do not (Armstrong et al. 1996). The rich cultural diversity of various tribal

groups, each with unique sets of social, spiritual, economic, and legal-political relationships with other tribes, ethnic groups, and the dominant society, reflects tremendous variation in individual, familial, and community behaviors, including the use of alcohol, and the extent of alcohol-related problems, including violence. The other important factor is that even in tribes with high rates of drinking problems, there are sizable numbers of abstainers, including both lifelong abstainers and former heavy drinkers.

### **ALCOHOL AND VIOLENCE INVOLVING AMERICAN INDIAN WOMEN**

Drinking and violence affecting American Indian women are important issues for several reasons. First, these are formidable behavioral health problems affecting American Indian individuals' well-being and community viability. In fact, alcohol abuse has long been considered the primary threat to American Indian health, including its connections with intentional and unintentional injury. Second, the combination of the prominent profile of alcohol problems and the relatively small population makes the problem accessible to prevention and intervention. Drinking and violence are sufficiently commonplace that a large proportion of individuals and community leaders have personal experiences and knowledge, attitudes, and beliefs important for generating theories, hypotheses, and prevention strategies. Third, the patterns and relationships among drink-

ing, violence, and gender in the American Indian community have relevance for the study of such patterns and relationships in general.

Many of the factors influencing violence, drinking, and gender for American Indians are likely to be comparable to those of other groups: the individual measures of age, economic status, family constellation, and societal integration, as well as the amount of chronic drinking and alcohol use in the violent event. On the other hand, there are psychosocial and sociopolitical factors in alcohol-related violence against women that are likely to be specific to the community. In the American Indian case, there is the unique geography and heterogeneity of the population, the legacy of historical and current legal policies on alcohol, and traditional and emerging cultural norms around drinking and violence and gender.

Empirical data on the etiology of intimate partner violence against American Indian women is extremely limited. In fact, a literature search of Sociological Abstracts and Medline databases from 1976 through 1998 revealed that less than 1 percent of all articles on the topic included information on American Indian women. The data that are available suggest that high levels of AOD use are related to intimate partner violence against Indian women (Bachman 1992; Bohn 1993; Norton and Manson 1995; Malcoe et al. 1997).

For American Indian women, as for other women, violent victimization has been noted as a severe problem, although little information on

prevalence exists. Analysis of the 200 Indian couples included in the 1985 National Family Violence Survey of U.S. households shows somewhat higher rates of reported past-year overall violence, using the Conflict Tactics Scale, than for white couples, and over a third higher rates for past-year severe violence (Bachman 1992). Recent research on the Navajo reservation assessed the prevalence of, and sociodemographic factors associated with, domestic violence by screening women during routine ambulatory clinic visits. Lifetime violence was reported by 179 (52.5 percent) of the sample, and 16.4 percent reported a current episode (past 12 months). In the regression analysis, being younger than 40 years of age and receiving Government assistance were independently associated with past-year violence (Fairchild et al. 1998). The Centers for Disease Control and Prevention-sponsored Pregnancy Risk Assessment Monitoring System (PRAMS) of samples of women giving birth found that for 1988-93 in Oklahoma nearly 20 percent of American Indians reported recent domestic violence (DeCoster 1994). An IHS survey of female mental health patients reported that 80 percent experienced sexual assault (cited in Zion and Zion 1996, p. 103).

Our knowledge of American Indian family or intimate partner violence is limited by the lack of public attention paid to this topic until the past few years. Although the first Indian battered women's shelter began in 1977, on the Rosebud Sioux Reservation, only recently have federally funded services for female violence victims been

targeted for tribal members (Tribal Law and Policy Program 1996). Similarly, only recently has a Minnesota-based male batterers program for Indian men attracted national recognition and replication (Chapin 1996).

The relationship of alcohol use to domestic violence against Indian women has also only begun to be addressed. Using the 1985 National Family Violence Survey's Drinking Index (Kantor and Straus 1987), the highest rates of Indian husband-to-wife violence were for male binge drinkers (22 percent) and the lowest rates were for abstainers (5.8 percent), with low, moderate, and high drinkers in the middle (Bachman 1992). Of a sample of 92 Indian shelter residents in Midwestern reservations, 75 percent reported that the abuser was under the influence of AODs during the assault that led to their admission, a higher proportion than found in most shelter studies (Bachman 1992). Among urban American Indian female clinic patients receiving domestic violence counseling in a Western state, nearly all reported their partner drinking at the time of the most severe incident, and over half were drinking themselves (Norton and Manson 1995). In a California survey of female clinic patients, 74 percent reported observing or experiencing violence from a drinking father (Hussong et al. 1993). However, non-Indian women also report high rates of partner drinking during violence.

With respect to the involvement of violence in women's drinking, in the Western clinic study, 65 percent of the domestic violence counselees reported having alcohol problems, compared

with 39 percent of other sampled clinic patients (Norton and Manson 1995). A study of female client records in IHS treatment centers noted that more than three-fourths had experienced both child physical or sexual abuse and adult domestic violence (Center for Reproductive Health Policy Research 1995). Kunitz and Levy (1994), in their longitudinal study of Navajo drinking, presented case studies of female alcoholics with harsh and tragic histories of parental abandonment, paternal sexual abuse, rape, spousal battering, loss of children, sibling illness and death, injuries, and chronic sickness; these women reported drinking to feel better.

In consideration of the causal factors involved in domestic violence among American Indians, the importance of a culturally appropriate approach cannot be overstressed. Many discussions emphasize the external changes imposed on families by colonization. It has been argued that Indian men's traditional place has been jeopardized, while many Indian women have become the family's primary wage earner (Blackwater and Ferraro 1991; Gregory et al. 1996). Furthermore, it is argued that Indian women were less likely to experience maltreatment prior to conquest than after. For example, while contemporary Navajo society suffers from domestic violence, historically Navajo women enjoyed "a high social status" (Zion and Zion 1996, p. 99). Traditional spiritual views have also been brought to bear; it has been noted that the Tewa Pueblo view of male-female polar differences existed within a unified scheme of interdependence

and balance (Naranjo and Swentzell 1989). On the other hand, it is acknowledged that in many tribes women historically may not have enjoyed complete protection from abuse (Zion and Zion 1996). In addition, in some tribal communities today a wife's rights may be overridden by demands that she bow to the familial or tribal consensus (Ross 1996). Some scholars have observed that many Indian women have reduced social roles, given the relatively new ideals of domestic patriarchy and realities of tribal dependency (Joe and Miller 1994).

Concerning American Indian women's strategies for preventing alcohol-related problems, an ethnographic study from the 1970s described Indian women's coping with male drinking in a rural Western community (Leland 1978). The older women appeared to have accepted the men's weekend drinking, whereas younger women often engaged in informal social control over the men's excesses through networking with other women. A few of the younger women regularly joined their men in drinking. Few women objected to or became involved directly in managing male drinking problems. These coping styles appeared to be similar for the roughly one-third of women who reported rarely drinking themselves, for the third who drank (sometimes heavily) on occasions, and for the third who drank both heavily and frequently. Research among older female Navajo drinkers finds many reporting originally beginning to drink "to keep my husband company" (Kunitz and

Levy 1994). However, given the contemporary shifts in most women's lives, with greater independence and earlier onset of social drinking, fewer younger women today may report these coping patterns (Schulz 1998). Much of our knowledge on this topic comes primarily from fiction and autobiographical literature (Wall 1993). While there has been a paucity of behavioral research, particularly on Indian women's experiences with sexual violence, such phenomena are common historic and contemporary themes in American Indian women's novels.

A California-based study, designed to provide information on self-reported needs, problems, and concerns for American Indian women who were pregnant and/or parents and at risk for heavy or problem AOD use, suggested that heavy or problem use of alcohol or other drugs is related to violence experienced by American Indian women (Klein et al. 1995). A total of 290 respondents from over 90 tribes were sampled in one urban and one rural region, using tribal and community-specific clinics and other agencies. Of the 290 respondents, 171 (59 percent) screened in for problem or heavy AOD use (Klein et al. 1995; Zahnd and Klein 1997). The median number of usual drinks reported per drinking occasion by the screened-in sample was 5.75 (Zahnd et al. 1997). Other drug use was also queried in detail. For the 171 screened-in respondents, of all drugs ever tried, marijuana was the most common, with 75 percent reporting lifetime use, followed by methamphetamine (55 percent), hallucinogens (33 percent), crack

cocaine (20 percent), and inhalants (10 percent). During the past or pre-conceptual 3 months, marijuana was again the most commonly used (51 percent), followed by methamphetamine (35 percent). Among the parenting screened-in subsample ( $n = 115$ ), reported use during the past 30 days was also queried: marijuana was reported by 46 percent and methamphetamine by 28 percent (Klein et al. 1995; Zahnd and Klein 1997).

Large numbers of the American Indian respondents indicated that they had experienced AOD-related problems or negative consequences from their AOD use. In response to queries, 68 percent of the screened-in sample reported experiencing an alcohol-related problem in general, or a specific negative consequence of drinking. When asked about other drugs, 44 percent acknowledged a problem or consequence. For alcohol, the most commonly named consequence was being hurt, beaten, or taken advantage of; for other drugs, it was being unable to control one's use. Of note, the women reported more alcohol- than other drug-related problems overall, even more alcohol-related than other drug-related arrests.

Large numbers of American Indian women in this study reported lifetime violent victimization (Klein et al. 1995; Zahnd and Klein 1997). Asked if they had ever been attacked with a gun, knife, or other weapon, 43 percent ( $n = 74$ ) of the screened-in sample responded affirmatively. Even more (64 percent,  $n = 109$ ) reported that they had been attacked with the intent to seriously injure them, with-



out a weapon. Asked if anyone had ever made them engage in a sexual act through force or threat of force, 36 percent ( $n = 62$ ) responded affirmatively. Almost half affirmed having sought police help or a restraining order for domestic violence (Klein et al. 1995). Large numbers also reported victimization as a minor, and the majority also reported having "big problems growing up," particularly physical or sexual abuse, family alcohol or other drug use, and loss of or separation from parents (Zahnd and Klein 1997). At the community level, asked whether fighting or violence was a problem among people they knew when people drank, 82 percent of the screened-in sample ( $n = 141$ ) responded affirmatively; asked whether fighting or violence was a problem among people they knew when people used or dealt drugs, more than three-fourths said yes (Klein et al. 1995).

Finally, using 204 American Indian families who participated in the 1985 National Family Violence Survey, Bachman (1992) examined intimate partner violence against Indian women and found that Indian women whose partners engaged in binge drinking were significantly more likely to be assaulted than other Indian women, controlling for urbanicity, age, stress, and family income.

## CONCLUSIONS

Reviewing the limited research conducted to date on how AOD-related violence affects American Indians, it is clear that while there is a need for more correlational studies, there is an

even greater need for more hypothesis-driven research aimed at explaining how rates or patterns of problem or heavy AOD use may be linked to rates or patterns of violence. Specifically, in reviewing the associations found between AOD use and violence in American Indian communities, the need for more culturally specific etiologic research emerges.

Research is needed to understand different patterns of alcohol-related violence by distinguishing between proximal drinking and the violent event. Research is also needed on the differences in tribal drinking and violence patterns, the interactions of gender and age, and the non-reservation-based (i.e., urban or other rural) patterns of alcohol and violence. Another important area for research is the nature of the gender relationships experienced by American Indian women that result in alcohol-related violence. It should be noted that the ethnicities of the male perpetrators in these intimate partner or domestic violence situations are unclear.

As an initial step in addressing culturally specific research issues around alcohol-related violence, etiologic hypotheses could be drawn directly from the ideas, concepts, and theories that emerge from the American Indian community and then tested. It is also important to test theories developed by researchers outside the community (such ideas as subcultures of violence, patriarchy, etc.). Investigations should include not only the acknowledged traditional intertribal differences in norms around drinking and violence but also the more recent impacts of

urbanism and of multitribal and multi-ethnic families and communities.

Finally, of extreme importance in understanding alcohol-related violence in this community is the need to understand that there are numerous strong extended family ties and cultural values, which are deep sources of support in the community (Center for Reproductive Health Policy Research 1995). These ties constitute potential protective factors for many individuals and highlight possible prevention and intervention strategies. This review has, of necessity, focused on problems. But strengths are of equal importance. Many American Indian prevention and treatment activities today, for both drinking problems and domestic violence, emphasize strengthening culture through the "Red Road" to sobriety incorporating spirituality (Rush, n.d.) and the "Sacred Circle" and "Sacred Hoop" emphasizing social commitment. Abstinence from AOD use and nonviolence have been identified as traditional Indian values, as in the well-known Alkali Lake Band experiment (Guillory et al. 1988). Understanding how these strengths and sources of support might protect against alcohol-related violence is vital in pinpointing potential individual and community protective factors.

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## FUTURE RESEARCH



## Chapter 17

# Where Do We Go From Here? Unmet Research Needs in American Indian Alcohol Use

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*KEY WORDS: Native American; prevention research; AOD (alcohol or other drug) abuse; community-based prevention; culturally sensitive prevention approach; cultural sensitivity; sociocultural AODU (AOD use) disorder theory; family AODU history; family-focused prevention; spiritual and religious regulation of behavior*

The chapters in this monograph have provided a broad overview of existing research in American Indian alcohol use and alcohol-related problems. In reviewing the literature, we find that much greater effort has been expended in documenting the problems than in developing and rigorously testing solutions. Conspicuous in this review is the paucity of research in many areas where substantive inquiry is not only needed

but presumably would make major contributions to the planning and delivery of interventions, improved and consistent clinical responses, and more culturally compatible treatment and prevention approaches.

It is clear that Indian alcohol research is uneven. In some areas a fairly substantial body of research exists (e.g., adolescent epidemiology, fetal alcohol syndrome, early history of alco-

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hol use); in other areas the research literature has only more recently developed (e.g., genetics, women's use of alcohol, violence). However, in areas usually considered as having the greatest need (e.g., prevention and treatment), there is a marked lack of well-conceived research. This deficiency persists in spite of repeated community entreaties for strengthened preventive approaches to misuse of alcohol and other drugs (AODs) across genders and generations and for expanded treatment availability, access, and options.

Where there is promising non-Indian-based research addressing preventive interventions and treatment approaches, this information seems rarely to be adapted or applied to Indian AOD abuse strategies. A commonly given reason for such oversight is that such research is not culturally appropriate because it was "not done with Indian people." Neither is it uncommon in Indian country to find interventions developed by one tribe rejected as unacceptable by another tribe because of long-standing historical enmity and distrust. Thus, even available Indian-based research may not be seriously reviewed and considered for use if it was not developed by and tested on the "right Indians."

One example of this can be found in an exchange between researchers in the *Journal of Studies on Alcohol*. Uecker and colleagues (1980) published a report in which they used a scale to determine what they termed "Indianism" through use of an Indian Culturalization Test (ICT). Indian researchers replied, noting that use of

the ICT was problematic, that no reliability or validity measures were available, and that it appeared to be specific only to one major Indian culture, the Lakota (Walker et al. 1981). Uecker and colleagues (1981) responded that Indian clients who took the test did not object to its contents. They acknowledged some omissions in the ICT and noted that there was a need for more research into psychological testing. Since the time of this exchange, there has been an increased effort by treatment specialists (Walker et al. 1996; Gale et al. 1998), prevention practitioners (May and Moran 1995; Walters 1995; Moran 1999), and genetics researchers (Robin et al. 1997; Long et al. 1998; Hesselbrock et al. 2000; Wall et al. 2000) to identify and develop more culturally appropriate screening and diagnostic tools (relevant to alcohol abuse), including tools that measure acculturation.

The contributing authors in this monograph have provided a wealth of recommendations for future research, all offered for the purpose of improving Indian health, reducing the negative consequences of alcohol misuse, and providing an improved understanding of what constitutes effective treatment and prevention. All recognize the concerns and antipathy of Indian communities to "research" (however perceived and defined by tribal governments and community members), and the authors suggest that this can be resolved by collaborative efforts in research design and implementation. Most importantly, all strongly believe that there needs to be



a much greater understanding of what works and what does not.

Throughout the chapters, there has been an emphasis on the importance of cultural sensitivity, cultural influences, and the need for traditional interventions. There is a small but growing body of research suggesting the efficacy and effectiveness of traditional cultural therapeutic modalities (Jilek 1982; Hall 1985; Slagle and Weibel-Orlando 1986; Manson et al. 1987), but there are currently too few data to make appropriate policy and programmatic determinations. Despite lack of concrete evidence about the role of culture in combating alcohol misuse, Indian people and their political leaders continue to request funding to support culturally based interventions. At the same time, they persist in holding a deep mistrust of research, researchers (Indian and non-Indian), and the utilization of research findings.

It was Vine Deloria, Jr., who first articulated this mistrust in his essay "Anthropologists and Other Friends" (Deloria 1969). Deloria characterized the work of anthropologists<sup>1</sup> in the following manner:

An anthropologist comes out to Indian reservations to make observations. During the winter, these observations will become books by which future anthropologists will be trained, so that they can come out to reservations years from now and verify the observations they have studied. After the books are written, summaries of the books appear in journals in the guise of arti-

cles. These articles "tell it like it is" and serve as a catalyst to inspire other anthropologists to make the great pilgrimage next summer. (p. 79)

Deloria's simplified overview of the process of anthropology is both humorous and sad. The humor lies in his perceptions about research (e.g., he defines the difference between pure research and applied research as the number of footnotes in an article) (Deloria 1969). The sadness is in the lack of understanding about the contributions that anthropologists have made, and continue to make, in advancing Indian causes, such as providing evidence for the Pacific Northwest Indians' "usual and accustomed" fishing grounds in Federal court, resulting in a major decision allowing these Indians to share more equally in the commercial fishing harvest (American Friends Service Committee 1970).

Deloria, however, was ahead of his time in suggesting that anthropologists (and by reference, all researchers) should be made to apply to the tribal councils for permission to conduct a study. In fact, in the 1990s, several tribes established Institutional Review

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<sup>1</sup> Deloria singled out anthropologists because representatives of this discipline were more evident on reservations. The anthropologists were in the forefront of preserving information about Indian people, customs, and cultures before other behavioral scientists began work with Indian communities. Sociologists have made substantial contributions to the understanding of urban Indians, and once mental health services became available, psychologists began to make contributions to the Indian research and treatment literature as well.

Boards (IRBs), and most tribes require research proposals to be reviewed and approved by tribal administrators. Urban Indian programs have similar review processes before a research team can gain access to clients, records, or other information.

In addition to Deloria, Robert Kane, a physician assigned to the Navajo reservation in the early 1970s, was another critical observer of Indian-non-Indian research relations. In his book *Federal Health Care (With Reservations!)* (Kane and Kane 1972), Kane suggested a number of possible actions that he believed the Indian Health Service (IHS) engaged in that would guarantee dissatisfaction with the Federal health system. These actions (or inactions) that Kane enumerated included providing funding unrelated to local needs and conditions, insisting on uniformity in administration and approaches to medical care, and failing to really involve or consult with the consumers of health care.

Kane also described his special disaffection for the IHS Health Programs System Center in southern Arizona (later renamed the Office of Research and Development). This program was established to engage in practice-oriented research. In Kane's opinion, the providers of clinical services in the field saw few tangible results from the research, obtained no clinical or intellectual stimulation, and received no help when they requested local consultation. It was also his perception that any research findings that were identified were never translated into useful service delivery

approaches, nor did the findings result in changes in policy that benefited health service delivery to Indian people. Moreover, the research program received generous funding and often required what Kane felt to be unrealistic contributions from busy providers (Kane and Kane 1972).

After Kane left the IHS, continued research activities were undertaken that were designed to improve care and simplify reporting and feedback of clinical results to providers. Special attention was paid to the development of systems that freed providers to provide patient care. Two examples of these improved reporting systems, the Patient Care Component (PCC) of the Resource and Patient Management System (RPMS), are cited in *IHS Primary Care Provider* (Dion et al. 2000; Finke 2000). The PCC and RPMS are an outgrowth of the early research that Kane and Kane (1972) were criticizing. In the 1980s, the IHS research facility in southern Arizona was closed and the research activities were moved, first to New Mexico and then, in the mid-1990s, to the IHS headquarters in Rockville, Maryland.

## COMMUNITY AND RESEARCHER EXPECTATIONS

Despite misgivings and past negative experiences, there continues to be major interest in what research, or the application of research, might provide to help improve Indian health. At the same time, as Indian communities grow more sophisticated and Federal

policies encourage greater autonomy and self-determination, there are some new complications in conducting research in Indian communities.

Researchers must now get tribal support for their work and often must have their proposals reviewed by IRBs (Hall et al. 1999). Two tribes have established their own IRBs (Navajo and Oklahoma Cherokee), and the IHS has established a two-tier review system: the Area IRB provides a first review for tribes without their own IRBs, and the IHS national IRB provides a second review. The IHS has guidelines that require this review and approval before any component of the IHS participates in a research project, even if that research is a collaborative undertaking with universities (e.g., Johns Hopkins University, the University of Washington) or with Federal agencies (e.g., Centers for Disease Control and Prevention, National Institutes of Health). Simply put, any research that involves the IHS requires IHS IRB approval, as well as council approval from any cooperating tribe. Increasingly, researchers wishing to work in Indian communities are also expected to obtain Indian IRB approval where tribes have a review process in place, in addition to their institutional human subjects review processes (William L. Freeman [IHS], personal communication, March 8, 1999).

In addition to tribal and IHS initial review, several Federal agencies that provide research support for Indian health now look for evidence of tribal council or urban advisory board review and approval attached to

research proposals. To obtain these approvals often requires additional time from the research team in clarifying concepts, explaining the research, and working with the community representatives to identify benefits for the community resulting from the research.

Another complicating factor in developing Indian research is that researchers are encountering increased expectations, even demands, that communities get something tangible and immediate in return for granting permission or agreeing to participate in research projects (Philip May [University of New Mexico], Alan Marlatt [University of Washington], James Moran [University of Denver], personal communications). This central theme, recurring more frequently in Indian research projects, is clearly articulated by Jon Rolf and colleagues in chapter 12 of this monograph. They state that a research project should bring more to the community in the way of services, equipment, and jobs than it takes away in data collected and knowledge of local issues and problems.

The increased expectations of immediate and tangible benefits are related to tribal perceptions that researchers inconvenience people, invade their privacy, and gather information that seems unrelated to the subject under investigation, while exposing community problems that serve to reinforce negative stereotypes about problem behaviors and community pathologies. One major part of the expectations is that the research team will respect local custom and tradition, most often expressed in the

form of sharing or providing food. This poses a major challenge, because most research grants do not allow expenditures for food items, unless the food is consumed in the context of the research design. Thus, the research team must develop "creative budgeting" strategies to meet the expectation of common custom, courtesy, and respect.

Another major research issue revolves around who owns the data. Clinics and community programs cooperating with research teams expect to share the information collected. However, some research projects collect much more in-depth and sensitive data than would normally be a part of any clinical record. Participants are assured of confidentiality in data collection, if not anonymity. Medical, psychological, and economic data are entered, using codes, in large data sets, usually at a university rather than on-site. Aggregate data are provided to the participating program, but not sensitive data beyond that which would normally be a part of a clinical encounter. This can cause misunderstandings, as some clinical programs expect complete return of data. University human subjects committees and Federal funding programs require that medical and other sensitive data be kept under lock and key, which also means off-site storage. Some data collected carry a mandate to report to local or State authorities, such as evidence of criminal activity or child abuse. This creates tensions for everyone involved in the project.

Once the data are collected, the participating program is expected to

review any reports or publications for accuracy and approval. It is also customary in conducting minority research, especially in small communities, to mask the identity of the community so that it is not readily apparent where it is or who cooperated in the research. These requirements about data collection, processing, storage, and return are all elements that must be worked out with the participating program or community before the research can proceed. Data ownership is an increasingly complex and contentious area for concern, and Congress is being asked to make determinations about the ownership of "facts" in everything from research data to stock market prices, best-selling book lists, and baseball scores (Garland 1999).

Another sensitive issue focuses on the publication of research results. Researchers are increasingly aware that research publications did not always seek out tribal perspectives on the issues under investigation or submit draft manuscripts to a tribal review board. By ensuring that tribal representatives have review and editorial input, the resulting research can be a richer and more defensible product (Hall et al. 1999). Many researchers are also including in authorship individuals from the community or clinic who made significant contributions to the research, even though these people do not hold academic appointments.

With these caveats in mind, let us consider the broad array of recommendations for research in the complex, multidimensional arena of Indians and alcohol. The recommen-

dations are divided into those pertinent to individual interventions, those pertinent to family interventions, those pertinent to community interventions, and those with implications for policy formulation.

## RESEARCH RECOMMENDATIONS

### RESEARCH AT THE INDIVIDUAL LEVEL

One of the most striking omissions in current Indian alcohol research is the absence of the Indian "voice." There are virtually no reports or inquiries regarding perspectives from the Indian individual's point of view. Rather, research has been of a "top-down," theory-driven nature. Research questions and hypotheses, for the most part, have their origins in non-Indian theoretical models that define what is important to know. There has been conspicuously little inquiry into what Indians might deem important in understanding alcohol-related behavior, nor is there any sense of individual variation in culturally salient alcohol data. There are no reports reflecting how an Indian adolescent perceives alcohol use or its importance to him or her, no discussion of risk-taking behaviors from the risk taker's point of view, few Indian ideas about what contributes to the success (or failure) of a treatment program, and little sense of how Indians view alcohol in general. Leland's work in a Nevada Indian colony is an interesting exception, as she was able to get informants to both name drinking behav-

iors and identify drinkers who fit these categories (Leland 1975). She was able to determine that community residents do not recognize one another by style of drinking, but by other attributes (Leland 1974). Such valuable insights into Indians' perspectives on drinking are, unfortunately, the exception rather than the rule.

A related concern is the ability to screen for and diagnose alcohol problems accurately. This continues to be an area in which more research is needed. Practitioners have used a variety of instruments to screen for and assess the degree of alcohol impairment and alcohol dependence in Indian clients. But there are virtually no reports of the reliability and validity of these instruments when used with Indian subjects. Researchers have cautioned that these scales, developed with non-Indian populations, may be subject to culture-bound assumptions and based in Western cultural, social, economic, or psychological attitudes, perceptions, and beliefs. Models that guide research may be one-dimensional and not reflect the complexity of the population or culture being investigated (Westermeyer et al. 1981; Beauvais 1989; Wolf 1989). The report by Uecker and colleagues (1980), while criticized for using a culture-bound screening instrument, was originally developed to caution researchers and clinicians about the potential for misdiagnoses when using the Minnesota Multiphasic Personality Inventory (MMPI). Other clinicians have also expressed concern about the accuracy of the MMPI when used with Indians (Pollack and Shore

1980). There continues to be a need to develop appropriate assessment instruments and to validate commonly used instruments on a wide variety of Indian patients.

The fact that there are very few Indian researchers conducting research in Indian AOD use further limits any reports of Indian perspectives. Several Indian researchers have contributed to this volume (Christine Benally, Arthur Blume, Elizabeth Helen Hawkins, Jeannette Johnson, Pamela Jumper-Thurman, Spero Manson, James Moran, Candace Shelton, and Joseph Trimble), and all of them are mentoring others to follow in their paths.

#### RESEARCH AT THE FAMILY LEVEL

Alcohol misuse is widely recognized as a powerful negative influence on families everywhere. Indian cultures share a deep respect for the importance of family as the core of the tribe and community. Because the family unit is so important, behaviors that contribute to family dysfunction, instability, hardship, and destruction are especially troublesome to Indian communities. Yet alcohol's effect on the Indian family (e.g., child abuse and neglect, domestic violence, elder abuse and neglect), appropriate family interventions, and the availability and efficacy of family-based treatment and aftercare have not been widely reported in the literature.

Resiliency is an area that has rarely been explored among Indian families and one that may hold great potential for identifying alcohol-use protective factors. Working in Indian communi-

ties, one often becomes aware that there are highly successful families, even in the most pathology-ridden community. These families often provide the community with continuity and leadership. Members of these families can be found holding down the available jobs in the community, in Federal programs (e.g., Bureau of Indian Affairs, IHS, or Agricultural Extension), State programs (e.g., serving as teachers, social welfare workers, police and sheriff's deputies, or working in maternal and child health programs administered by the various States), or tribal programs (in such areas as health, education, law enforcement, environmental protection, and, most recently, museum management and gaming administration). Such families may have one or more individuals who are known to misuse alcohol and get into trouble, but they are the exception. In an environment that sanctions misuse of alcohol, acting-out behaviors, and alcohol-related violence and death, these families manage to stay sober and productive.

Not a single study has been found that seeks to identify what this resiliency or survival strategy is, let alone whether it can be distilled and replicated in other families and communities. Several of the contributors to this monograph have alluded to the importance of resiliency, but none reported research that seeks to capture its manifestations in such families. One is moved to ask why it is that research continues to replicate studies of known problems instead of striking out in new directions along more positive pathways?

Indian communities have endeavored to provide support and assistance for families, especially young families. Because Federal housing programs built homes only for the nuclear family, the effect of these programs was to disperse extended families, removing the "institutional wisdom" of grandparents, aunts, uncles, and cousins. One program that endeavors to replace the familial generational transmission of knowledge and support is the Foster Grandparent Program.<sup>2</sup> In this program, elders are available to work with young families to provide guidance, emotional support, and basic education about such things as cooking, house-cleaning, and childcare. The effects of this and other interventions, however, have not been documented in a way that allows other communities to implement or adapt these programs.

Although many authors writing about Indian issues cite the family as a key element in the maintenance of Indian communities (Red Horse 1981; Ryan 1981; Bachman 1992), there is little research on how the family dealing with members misusing AODs might be reinforced and supported. Nor is there much discussion of successful family therapies. Published research often mentions the importance of treating the family, especially where women and their children are concerned. In fact, many observers of treatment programs have noted over the years that unless children can be accommodated in treatment, it is unlikely that many women will seek or complete treatment (Ernest J. Turner [former director, Seattle Indian Alcoholism Program],

Sidney Stone [former director, Native American Recovery Association, Portland, OR], Mary CrazyBear [former IHS employee, deceased], personal communications). Thus, assistance to families continues to be a major need in most communities, and research that evaluates and documents both successful and failed interventions is needed to help improve understanding of what does work, especially in the rapidly changing sociocultural environment that many Indians now find themselves experiencing.

In chapter 6 Parker-Langley notes that while community-based programs may benefit from involving an entire community, most Native communities function on an extended family basis. Studies that focus on young people alone, without addressing the need to change norms and patterns of behavior within the family, or socialization factors exhibited within the community, will probably fail. Significantly, young people can become a catalyst to draw the entire community into a preven-

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<sup>2</sup> *The Foster Grandparent Program was created in 1973 under Title II, Part B, of the Domestic Volunteer Service Act of 1973 (P.L. 93-113) and was amended in 1989 (P.L. 101-204). It is currently administered under the auspices of the Corporation for National Service: Senior Corps. The purpose of the program is to create opportunities for low-income persons age 60 and over to provide supportive person-to-person services in health, education, welfare, and related settings to children having exceptional needs. Children attending Head Start programs qualify for participation, as do children from homes of substance abusers. Three percent of all volunteers are Indian or Alaska Native. In addition to Federal funding, Foster Grandparent programs also receive non-Federal funding.*

tion initiative, as elders become teachers, parents get involved as participants or spectators in children's activities, youth become program assistants or peer counselors, and so on. This model can be successfully implemented in both urban and rural settings, with both reservation and nonreservation youth. Moran's Seventh Generation Program is designed to involve family at key points (Moran 1999), and other programs seek to draw on tribal elders to share cultural knowledge and skills with tribal youth.

#### RESEARCH AT THE COMMUNITY LEVEL

When a significant number of individuals within a community engage in risk-taking behaviors, the entire community can be said to be at risk. In some reservation communities, misuse of alcohol occurs in up to 70 to 100 percent of Indian adults (Fairbanks 1973; Hodgson 1996); in one Alaska study, 41 percent of the adult population over age 15 considered themselves to be excessive drinkers, and 67 percent reported experiencing blackouts (Foulks 1989). Earlier epidemiologic surveys found similar high rates of alcohol use. Whittaker (1966) found that 70 percent of Sioux over age 14 were drinkers, and 49 percent of drinkers reported consuming large amounts of alcohol at each sitting. Mail (1967) found that 73 percent of Apache men and 50 percent of Apache women over age 15 used alcohol, but the highest rate of use was among men ages 25-34, with 85 percent being reported as drinking. Moss (1981) reported a range of drinking

prevalence in his 20-community study from a high of 96 percent in Green Bay, Wisconsin, to a low of 28 percent in Chinle, Arizona. Despite the variability in rates of alcohol use, the generally high prevalence of drinking clearly has an adverse impact on Indian communities.

A critical area for further community research is the need to better understand the risk and protective factors underlying domestic violence toward Indian women. Although research indicates a high rate of alcohol misuse co-occurring with sexual and physical assault, much more information is needed to explain the context in which this violence takes place. Indian communities appear to be well aware of spousal abuse, yet little is done to intervene. Child sexual abuse is gradually being addressed, although there are major obstacles to implementing strong programs (Powers 1998). The cultural and sociopolitical climate that fosters the conspiracy of silence and non-intervention should be explored so that possible intervention points can be identified. The interventions need to be developed to fit within the cultural norms of the community, albeit recognizing that some communities are in a major state of disorganization and flux. Patterns of behavior are established early in life, yet there is little to inform us about the perceptions, attitudes, and beliefs of Indian youth. Preventing violence toward women may need to be rooted in the experiences and perceptions of boys and young men well before they become the boyfriends, partners, or husbands of Indian women.



Women, however, are not always the targets of violent behavior. Emergency room logs from one Indian hospital indicated that men occasionally sought help—for example, when an angry wife assaulted her husband (who was probably intoxicated) with an iron frying pan (observation from the field notes of P.D. Mail during her research into the prevalence of problem drinking in a Southwest tribe, August–December 1966). In situations where there are few alternatives for the expression of anger, short of evoking witchcraft or physically lashing out, men as well as women may be at risk for violence. Surveys in Indian hospitals, interviews of outpatient clinic clients, and review of police logs may provide a broader picture of physical violence than previously suspected in reservation communities. Attempted homicides and suicides are also expressions of this violence. In one study, lifetime suicide attempts were twice as common among women who had experienced domestic violence (37.5 percent) as among women who were not victims (18 percent;  $p < 0.05$ ). Although a similar number of men had attempted suicide (32.5 percent), it was not associated with domestic violence. Qualitative responses highlighted the role that alcohol, jealousy, and control play in domestic violence in this community (Hamby and Skupien 1998). For urban dwellers, health center data and personal interviews may help provide a better overview of the extent of physical violence and assault among Indians.

One other sort of violence that many Indian communities appear to support is the violence, either verbal or physical, against those individuals who are attacked for their perceived differences. In some cases among youth, old intertribal animosities and histories may precipitate fighting. Fighting can also occur when non-Indians assault Indians as an expression of racial discrimination; Indians may consider it acceptable to respond with violence when assaulted in this situation. And, although there is little published research on the topic, it is possible that gay and lesbian Indians (Two-Spirit people) are often the targets of verbal and physical abuse from Indians and non-Indians alike.

Historically in Indian culture, androgynous males often had special ceremonial roles in their communities. Known as *berdache* (defined as morphological males who do not fill a society's standardized male role and who have a nonmasculine character), they had cultural protection with an understanding that one did not attempt to force behavior change (Williams 1986). While there might be "joking or ridicule, it never went beyond that. The literature does not show instances where a berdache was physically attacked because of his differences" (Williams 1986, p. 41). There was a general belief that if someone harmed a berdache, he would have bad luck. Contemporary Indian youth may identify as homosexual (gay or two-spirited) more often than Indian males in the past, but whether or not they identify as gay, they are more apt to be targets of

violence because the institutional roles for gay men have disappeared. There is much less information on historical institutional roles for lesbian-identified women in the research literature, although Roscoe (1998) presented information on male and female berdache in his discussion of third and fourth genders in Native North America. And Brown (1997) discussed contemporary gender styles among modern gay and lesbian Indians.

In Lowery's (1994) life histories of Indian women, two of her subjects reported using alcohol to cover their confusion about their homosexuality and their anger at being objects for rape and being forced to get involved in fights. Because reservations often are host to Fundamentalist and Pentecostal religions, it would seem that gay Indian youth face the same or greater risks for violence than gay urban Indian youth. Considering the high rate of suicide and suicide attempts by Indians, the feeling of being different could be an underlying source of self-directed anger and despair, and there is probably a connection between this feeling and alcohol misuse. Despite the potential importance of understanding community attitudes toward sexual orientation, these attitudes have not been explored.

Turning to community attitudes toward abuse of another sort, we consider the issue of alcohol use by pregnant women. Some people view drinking by pregnant women as fetal abuse, and there has been anecdotal evidence that some Indian communities take extreme measures to protect fetuses from alcohol exposure (such as

jailing a pregnant woman who will not quit drinking). However, a survey of communities by Philip May and colleagues was not able to identify any community that would acknowledge taking such measures (P. May, personal communication, March 1999). We conclude that there are no formal community sanctions to provide intervention for protection of unborn children or for women who are seriously misusing alcohol.

To provide communities a base from which to plan and change, several researchers have suggested adaptation of Paulo Freire's empowerment process. Wallerstein and Bernstein (1988) used a Freirian approach to develop a school- and community-based participatory prevention program designed to reduce morbidity and mortality among AOD-using adolescents in New Mexico. Called the Alcohol and Substance Abuse Program (ASAP), this intervention stressed participation of young people as co-learners with health professionals. In this approach, students' experience was valued, and critical thinking before taking action was emphasized. The learning is based on experiences of the youth within their community context, along with group decisions on what can be changed. Although this approach takes time and patience, it is one possible solution for communities seeking change.

A different sort of community that is deserving of closer scrutiny is the environment of colleges and universities attended by young adult Indians. Here, regardless of culture of origin, Indian and non-Indian youth

together must adapt to and master a wholly new subculture. Indian youth are not alone in engaging in heavy drinking in this environment, but there is little research that yields information as to whether Indian youth drink more, the same as, or less than their non-Indian counterparts when participating in collegiate drinking. Research could help in determining what is protective and what exacerbates risk in this bibulous environment, where heavy drinking is often the norm.

A community protective element that is touched on by many authors but not, as far as we can tell, explored in depth, is the role that spirituality, faith, or religion plays in supporting abstinence, moderation, or sobriety. Several reports indicate that the Native American Church and its Peyote Road have had significant influence in helping drinkers stop drinking, regain health, and assume leadership roles in their communities. Occasionally, use of peyote brings the individual adherent into conflict with the law (Doyle 1980; Brewer 1991; Bannon 1997; Abbott 1998). Many of the messianic religions strongly promote temperance and abstinence, such as the Iroquoian Handsome Lake Movement (Deardorff 1951; Wallace 1970), the Indian Shaker Church (Slagle and Weibel-Orlando 1986; Ruby and Brown 1996), the Native American Church (Hertzberg 1971; Anderson 1996), and Christian fundamentalism (Hippler 1973, 1974; Foulks 1989).

The Indian-originated messianic movements often combine elements

of Christianity with Native tradition and beliefs (Wallace 1956) and thus contribute to the maintenance of culture, albeit changing and adapting culture. There has also been a revival of other traditional ceremonies, such as the Sun Dance (Jorgensen 1972), which has a strong following among recovering Indian alcoholics (especially younger people) because it is a physically demanding ceremony with powerful spiritual connotations. On the other hand, the Christian missionaries and their Fundamentalist approaches often run counter to Indian community traditions by such actions as prohibiting dancing, gambling, and participation in traditional ceremonies. Indeed, Christian mission influence has been a recommended antidote to Indian drinking for well over a century (Smith 1862/[1982]).

The best example we have of the community as the subject of treatment is the Alkali Lake Band's success in attaining sobriety as a community (see chapter 7 in this monograph). In cases where the problem of alcohol misuse is so pervasive that everyone in the community is affected by the consequences of alcohol misuse, then the community should be the patient. There are examples of community-wide interventions that hold promise for both prevention and treatment. Among some of the exemplary community-based prevention programs are Project Northland, Communities Mobilizing for Change on Alcohol (Wagenaar and Perry 1995), and the Midwest Prevention Project's Indiana Students Taught Awareness and Resistance (Rohrbach et al. 1995).

Multiple interventions, large scale, parental involvement, peer leadership, and community-wide policy changes characterize these programs. Each of the programs has elements that could be adapted and adopted by Indian communities, along with an already tested evaluation protocol. Yet this has not happened, and there is little evidence that it will any time soon.

### RESEARCH EXAMINING POLICY FORMULATION

One of the most overlooked areas for productive community-based change is in the arena of policy formulation and enforcement. There are very few researchers who have explored this realm. Two of these individuals—Berman and May—have made significant contributions to this monograph (see chapters 5 and 13).

In looking at policy options for Indian communities, May (1992) provided suggestions for three areas in which policy can be developed or applied: regulating the supply of beverages, shaping drinking practices directly, and reducing environmental risks. Berman joins May in proposing creative use of taxation and pricing as ways to institute controls over alcohol distribution and use (see chapter 5). May (1992) also examined the benefits and disadvantages of on-premise versus off-premise liquor sales, as well as number of outlets. He recommended permitting liquor sales in grocery stores and reducing or eliminating sales in minimarts and gas stations, as well as minimizing sales in bars where food is not sold. The age of purchase and age of driving can be

influenced by tribal policies, as well as establishing lower blood alcohol concentration (BAC) limits for intoxication when driving and setting zero tolerance for underage drinkers. Enforcement of minimum age statutes would also be helpful (May 1992).

May is one of the very few researchers who have given serious consideration to the effect of prohibition on Indian reservations (May 1975, 1976, 1977; May and Smith 1988; May 1992). He noted that maintaining or rescinding prohibition is a major tribal decision. Legalization allows for a much greater breadth of control, power, and economic options. Other options include banning alcohol advertising at Indian events such as pow-wows and rodeos. But for those with access to television, avoidance of liquor advertising is difficult when brewers are major sponsors of televised sporting events. One Pacific Northwest tribe has taken the unusual step of first voting to increase taxes on alcohol and then, in an abrupt about-face, voting to ban all liquor sales and possession of alcohol within the boundaries of their reservation ("Tribal attorney speaks. . ." 2000). Non-Indian tavern owners are suing in State courts, claiming their civil rights have been abridged. This is the first major restoration of reservation prohibition outside of Alaska, where villages periodically vote themselves dry.

May's second set of options involves concepts of safer or appropriate drinking, and steps to influence drinking practices directly, such as providing non-alcohol substitutions,

providing lower alcohol content beverages, and making BAC calculators available along with instructions for their use. Enforcement of intoxicated driving laws and public intoxication statutes can also send the community messages about appropriate alcohol use behavior (May 1992). Education, information, dissemination, and training need to be widely available, not only in schools but in a variety of settings (e.g., churches, pow-wows, tribal police departments, outpatient clinics, trading posts, and grocery stores). For tribes with radio and newspapers, alcohol education needs to be a regular feature.

May's third set of options addresses the environment in which drinking takes place. He recommended evaluating the physical safety features of the environment (use of seat belts, infant car seats, purchase of airbag-equipped vehicles) as well as evaluating places where frequent alcohol-related crashes occur. Social safety measures need to be encouraged, such as designation of drivers, promotion of "safe ride" programs, and increased public awareness of and intervention for severely intoxicated individuals. Promotion of controlling damage in the social environment is also an action the community can take. This might include responding to and countering negative images about a community in local non-Indian media and providing information about positive achievements. Communities can also set up programs to assist victims of alcohol-related injuries and deaths, so that the focus is on the welfare of the community and its members.

May (1992) provided several other suggestions for Indian communities that want to make constructive changes. Yet policy utilization is often a neglected and overlooked area within Indian alcohol research.

## OVERLOOKED RESEARCH OPPORTUNITIES

In reviewing the literature, one area in which there has been virtually no research reported involving Indians is that of therapeutic intervention or counseling. This would include both individual and family counseling. In part, this lack of research may reflect the paucity of outcomes inquiry in the AOD treatment area, but there is also a marked lack of information about family counseling addressing comorbid conditions that might underlie or exacerbate misuse of alcohol. This is not to say that there is no discussion of counseling in the literature, but there are no structured reports of counseling approaches tested in clinical settings. Despite the lack of research, there are several texts devoted to discussions of cross-cultural counseling, and these all include discussions of issues around counseling Indians (Richardson 1981; Trimble 1981; Trimble and Fleming 1989; Sue and Sue 1990; Botvin et al. 1995*b*; Herring 1999; Sue and Sue 1999).

These discussions tend to be broad approaches, often citing differences in values and remarking on the unique history of Indian peoples, while lacking any concrete guidance or examples. The discussions may be drawn narrowly on experience with a single tribe or culture, presenting culture-

specific information as though it were applicable to all Indian peoples (Richardson 1981). Counseling discussions often enumerate those values held by Indians that make them different from non-Indians, such as sharing, cooperation, noninterference, time orientation, extended family orientation, and harmony with nature (Richardson 1981; Sue and Sue 1990). Although these attributes are commonly cited, they have never been subjected to testing in terms of how they may or may not influence the outcome of therapy. The fact that many of these attributes are common to individuals in other cultural groups, such as Asian-Pacific Islanders or New World Spanish-speaking people, is never noted. General observations that "many Indians" do such and such do not provide much guidance nor any sense of what really works. For example, in one report the authors say "Many Indians do not understand what occurs in counseling or what their expectations are" (Sue and Sue 1990, p. 187), but they do not report any studies that show this is common to many Indians.

There are a few discussions that could have led to more in-depth explorations, such as the discussion of successful group therapy sessions held in two languages (Wolman 1970). Except for the project described by Trimble, however, there does not appear to be any effort to take such preliminary reports and develop real structure for testing and improving the suggested techniques (1981). Although he observed that "few, if any investigators have developed

scales using Indian samples as a reference group or norm group" (p. 214), he described a project that set out to develop a scale to assess value orientations. Beginning with a small working group ( $N = 20$ ), several Indians identified value orientations as conceptualized from tribal and individual perspectives. Common clusters of items from this discussion were then pretested on a group of 100 Oklahoma Indians. The Oklahoma group established seven value domains they believed were common to Indians: kindness, honesty, self-control, social skills, social responsibility, reciprocity (altruism), and independence. A scale with these constructs was tested with 791 Indians from five different cultural areas of the United States. Each item was accompanied by six alternatives and laid out in Likert-scale fashion.

Trimble and colleagues found that there was close agreement from all five groups in the seven items and that respondents felt that most items reflected representative values. A factor analysis showed that the seven items produced two factor dimensions, one containing kindness, honesty, social responsibility, social skills, and reciprocity, and the other containing independence (Trimble 1981). Thus, it is possible to develop assessment instruments that appear to contain elements germane to a majority of Indians.

It is also possible to compare and contrast value orientations between Indians and non-Indians. But there is little evidence that such assessments are applied in Indian clinical settings, integrated into counseling approaches,

or used in structured investigations. Yet Trimble (1981) suggested that ascertainment of Indian value orientation is important in counseling because the value convictions can be used to help a client reduce conflict and help solve problems in a culturally appropriate fashion.

Perhaps the most often stated and least tested assumption in many prevention and intervention programs is that improving self-esteem can help lower the risk of AOD abuse. In chapter 9 of this monograph, Trimble and Mahoney report that this assumption does not always prove to be true. The paucity of research suggests that the areas of treatment, intervention, and counseling would benefit from considerably more structured inquiry designed to ascertain what approaches do achieve the desired results of abstinence, sobriety maintenance, and positive mental and sociocultural health.

## THE ROLE FOR BEHAVIORAL SCIENCES

In both prevention and treatment of Indian alcohol misuse, the social and behavioral sciences have made substantive contributions. Throughout the 1970s, and even earlier, the majority of reports on the negative consequences of alcohol use in Indian communities came from the discipline of anthropology. Anthropologists were also engaged early on in studying the context—that is, the cultural customs, mores, social interactions, and history—in which destructive drinking styles emerge and continue. After anthropologists, the profession-

als who most frequently published research on Indian drinking were physicians. But many others, including statisticians, lawyers, nurses, journalists, pharmacists, and missionaries, have weighed in with fact, fiction, and commentary (Mail 1984). The most studied population has been the Navajo, closely followed by the Sioux and several southwestern tribes.

Theories to explain Indian drinking can be assigned to one of three major conceptual areas: biological or genetic susceptibility theories, psychological or psychosocial theories, and the sociocultural or environmental theories. Until the application of modern genetic investigation, the major biological theory was the assumption of physical (i.e., racial) difference between Indians and Europeans. Chief among the psychological theories are those relating alcohol misuse to low self-esteem, anomic responses, and learned behavior (Mail 1984). The sociocultural category is the one most frequently proposed; it includes such constructs as acculturation, lack of aboriginal exposure, lack of cultural role models, lack of social norms and sanctions, and drinking as a political act.

Despite the many theories proposed to explain why Indians misuse alcohol, there is little research to support these theories. One point that virtually all participants working to improve the health status of communities, families, and individuals agree on is that Indian involvement at all levels is necessary. Working with local providers and outreach workers, individuals trained in anthropology, psychology, and sociology can share

knowledge of various assessment approaches that may help communities to better understand patterns of behavior and to develop appropriate interventions. The problem of alcohol misuse not only has clinical manifestations and psychological implications, it has also become deeply integrated into Indian culture. Thus, collaboration between community members, clinicians, and social scientists seems necessary to arrive at long-lasting solutions.

In chapter 8 of this monograph, Beauvais and colleagues discuss current assumptions regarding AOD abuse prevention. They note that "culture is a very difficult concept to quantify and does not lend itself well to the usual types of quantitative, scientific inquiry." Implicit in this statement are actually two separate issues. The first questions the utility of the culture concept as a theoretical construct. Is it scientifically productive to consider culture as an element in Indian alcohol misuse? The second issue is whether the concept of culture can be operationalized and quantified for statistical manipulation. Our answer to both questions is "yes, under certain conditions." We can turn to the discipline of anthropology for guidance in both areas.

Regarding the productive use of the culture concept, the discipline of anthropology has a long history of a research focus on culture. In fact, anthropologists have made major contributions to the understanding of and respect for Indian cultures, beginning with the work of Fred Eggan in the 1930s (1937/1972) exploring the social anthropology of New World

tribes; Clyde Kluckhohn (1944) writing on the Navajo culture, belief systems, and health practices; and Ruth Underhill's work among the Papago (now Tohono O'odham), including her translations of traditional wine festival songs (1938). The respect for cultural differences and the work in trying to understand where there was friction between beliefs, especially about ways to deliver medical care, influenced physicians in their practices among Indian people (Leighton and Leighton 1944). Although some Indian observers saw the work of anthropologists as intrusive and harmful (Deloria 1969), and threatening to mental health (Duran and Duran 1995), researchers such as Spradley (1979, 1980) refined ethnographic approaches to data collection to gain a much greater understanding of the role of culture in health and illness. Bahr and colleagues (1974) used tools based on Spradley's research in their ethnography of Pima shamanism.

One of the first studies of the impact of alcohol on Indian communities was anthropologist Horton's (1943) early functionalist approach. MacAndrew and Edgerton (1969) later developed a comprehensive thesis about the historical role of alcohol in various cultures, formulating the concept of drunkenness as a "time out" from societal demands. Topper (1976) expanded cultural explorations with his description of linguistic approaches to understanding the role and perception of alcohol in Indian culture. He noted that consideration of the native language can help the



anthropologist determine what his informants consider most "important" in their frames of reference. Understanding these different frames of reference and what is important to Native clients may assist counselors and therapists in their work and keep them from assuming deviance when the behavior in question is viewed as normative (Topper 1976). In these, and other cases, alcohol was viewed as having positive as well as negative contributions to the various Indian societies.

Just as anthropologists defined and described the cultural context for alcohol use, sociologists and psychologists have made major contributions to the understanding of family dynamics around alcohol (Red Horse et al. 1981). They have also sought to adapt counseling methodologies to better accommodate cultural perceptions and beliefs (Pedersen et al. 1981; Trimble et al. 1992; Borvin et al. 1995*b*).

Beginning with the Leightons in the 1940s (Leighton and Leighton 1944), physicians began to try to bridge the perceptual differences between traditional Indian and European allopathic or "Western" medicine. Collaborations between physicians and anthropologists have produced in-depth studies of alcohol use across generations (Kunitz and Levy 1994), helping us to better understand where interventions may be directed. More recently, behavioral scientists have turned their attention to identifying and addressing comorbid disorders that may occur with AOD misuse in Indian communities. By using ethnographic approaches to

better understand depression and other psychological conditions, researchers are making important contributions to improved therapeutic approaches (Dinges and Duong-Tran 1993; O'Neil 1993; Walker et al. 1993).

Thus, regarding the body of social and behavioral science work conducted on, with, and by Indians, we would respectfully disagree with Beauvais and colleagues' statement about culture being difficult to quantify and not lending itself to the usual types of "quantitative, scientific inquiry." First, scientific inquiry does not of necessity imply a quantitative methodology. Qualitative methods can be critically important in understanding complex phenomena such as cultural behavior. We would urge researchers to avoid limiting themselves unnecessarily in terms of available research methods.

Beyond this we would point out that culture is no more difficult to quantify than any other abstraction (e.g., personality, social class) that actually subsumes a host of component elements. Perhaps the problem lies, at least in part, with a tendency of researchers to use culture (or ethnicity) as a variable in itself. The concepts of culture and ethnicity are far too multilayered and complex to be adequately studied as simple categories or by the use of proxy variables. Rather these concepts must be broken down into theoretically meaningful constituents (beliefs, behavioral patterns, norms, affective tone of social interactions), which then can be studied (see Pelto and Pelto 1997 for a cogent discussion addressing the need

for precision and specificity in the conceptualization and study of culture).

Some researchers are doing just that. Indeed, in many recent studies, including those by Beauvais and colleagues, questions addressing various dimensions of cultural orientation are embedded in surveys in order to better adapt and design interventions appropriate to their perceived place in one or more cultures (May 1982; Oetting and Beauvais 1990/91; Mail 1996; Moran 1999). However, alcohol research as a whole must move beyond looking for single cultural or ethnic dimensions for significance and must acknowledge and address complex interrelationships among constituent cultural factors. In other words, a single behavior pattern or norm may not be enough to demonstrate significance, but behavior patterns clustered with norms and taken as related wholes may in fact make quite a difference in the study of cultural differences in alcohol use and in the differential success of prevention or treatment interventions.

Among the more successful approaches identified are those of building social resistance skills (Schinke et al. 1986; Gilchrist et al. 1987; Botvin et al. 1995*a*, 1995*b*; Moran 1999). Other medical and behavioral science collaborations have advocated for cultural adaptations of treatment methodologies (Jilek-Aall 1981; Womack 1996) and have even promoted some traditional ceremonial practices as having very positive therapeutic applications in conjunction with non-Indian approaches (Amoss 1978; Jilek 1981).

Some Federal programs have become major advocates for the importance of including cultural considerations and sensitivities in planned interventions. For example, the Center for Substance Abuse Prevention established a "Cultural Competence" monograph series, which provides handbooks and guidelines for practitioners working with racial/ethnic communities (Orlandi et al. 1992), guides for social work in minority communities (Philleo and Brisbane 1995), and information on ways to conduct participatory research in ethnic communities (Langton et al. 1995). The Office of Minority Health has promulgated a draft set of culturally and linguistically appropriate service standards for the delivery of medical care ("Call for comments. . . ." 1999; Fortier and Taylor 1999), establishing 14 guidelines that should be implemented by federally funded programs serving ethnic and minority populations.

### **AMERICAN INDIAN RESEARCH: NEW DIRECTIONS**

The authors in this monograph have a wealth of experience in working with American Indian communities. Their research is designed to provide answers to the vexing question of why Indian individuals and communities continue to misuse AODs. Their work provides a strong foundation from which future work will be conducted. Each has indicated that there is much work yet to be done, and many unanswered questions. Of course, every answer raises new questions.

What is most important in reviewing the body of research currently available is identification of those areas lacking critical investigation. Some of the questions that need to be asked are simple; others are quite complex. The questions sort themselves into several major categories, but these are neither mutually exclusive nor exhaustive. The questions posed here address understudied areas in the hope that more information might help shape prevention and treatment strategies in both reservation and urban Indian populations. We also hope that these questions may provide some guidelines for the next generation of researchers.

- *Measurement:* What instruments do we need to better assess Indian psychological and cultural orientation? How universal are the values and beliefs attributed to Indian peoples? What are the attributes of biculturalism?
- *Drinking behavior:* Why is the pattern of male and female drinking so different? Why can some Indians drink moderately and not get into trouble? What is the Indian definition of moderate drinking? Can moderate drinking be taught?
- *Psychological issues:* What is the long-term effect of the unique dependency relationship between Indians and the Federal Government? How can we better train providers of medical care to look for comorbid disorders so that the whole person can be treated? How important is cultural orientation in prevention and treatment? What is the role of religious participation in changing lives and supporting recovery? Are homosexual and transgendered Indians at much greater risk for alcoholism and suicide? How much does alcohol contribute to domestic violence or child sexual abuse?
- *Community research:* Why don't communities adapt interventions that have been shown to work elsewhere? What protective factors exist within communities, and can these be distilled, generalized, and applied to other communities? What measures do we have to intervene in pathological communities (i.e., those with a high prevalence of AOD misuse, violence, property destruction, fighting, and rape)? How can communities be helped to become more autonomous, self-sufficient, and self-determining? Will the presence of Indian casinos increase community alcohol abuse in those communities with casinos?
- *Policy:* Would adopting a harm reduction approach be more realistic than stressing an abstinence-only policy? How can Indian communities create effective alcohol policy and enforce these policies to the benefit of their residents? Does continuing a policy of prohibition on major reservations make sense? How can nonbeneficial and conflicting policies be effectively changed?
- *Youth and family:* How can families be supported and strengthened to deal with the consequences of alcohol-related loss and disruption?

What is the role of alcohol in Indian juvenile gangs? Why are some families able to resist AOD abuse while others are devastated by it? Are coping skills different in reservation and urban families? How different does treatment need to be if a patient's drinking career began at age 9 or 10? And perhaps most critical of all, how do we help Indian children and youth acquire the best from both cultures, the Indian and the non-Indian, so that they are better prepared to deal with the challenges of the 21st century?

These are but a few of the questions. The answers will come with the help of the increasing number of Indian scholars now being trained and working in the field. Their unique perspectives will make important contributions in addressing many of the complex issues facing Indian communities. Communications are being facilitated by new ways to share and exchange information via the Internet. If we pool our knowledge, as was done at the conference that gave rise to this monograph, we may shorten the time needed to find answers, detour from unproductive lines of inquiry, and move ahead as a more unified team.

The roots of the problems occurred in centuries before this one. Perhaps the new century will witness great progress and restoration of health for the individual, family, and community.

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